



Better Joints— Bigger Profits

BETTER rail joints reduce maintenance costs, lower power losses, and eliminate delays all along the line. A poor track circuit causes low voltage—an underfed trolley locomotive is a step backward toward the mule. It can't do the work of today.

Make sure that your rail joints are as nearly perfect as possible by using G-E Resistor Arc Welders. They are light in weight and easily portable. Special resistance wire well insulated, ventilated, and protected makes them safe and always ready for service. Their rating makes them suitable for both track work and repair of damaged or worn equipment. Your nearest G-E office will supply you with complete information.



Type AW Resistor Arc Welders

- easily portable, weigh 60 lbs.
- protected resistors
- well insulated
- properly ventilated
- voltage rating, 200 to 275 volts
- variable current capacity, 60 to 200 amp. for bonding, repair and construction work.

5-30-12

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

The camera caught this trolley motor at the instant it was taking the rails after jumping the track. (Note the stick snapped in half by the weight of the wheel.) Battery motors often jump the track, too, and then the ruggedness of the battery is severely tested. If the battery is an Exide-Ironclad, however, you need not worry.



This miner has shot down his coal, but hasn't any car in which to load it. When motors are driven by speedy, peppy Exide-Ironclad Batteries, miners seldom have to wait for cars.

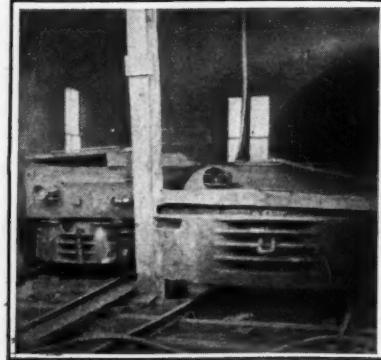
More Speed and less cost in hauling coal



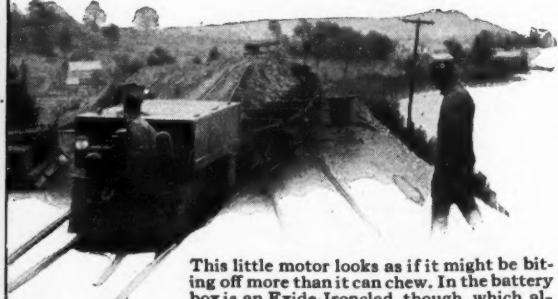
How many tons you put over the tipple each day depends largely upon the speed and efficiency of your haulage system. You can't mine coal faster than you can haul it. That's why more tons are mined daily when Exide-Ironclads drive the haulage motors.

These motors have done their day's work and are on charge. They are taking current quickly, easily, and wasting very little of it, for the batteries are Exide-Ironclads, and this battery is extremely efficient on charge.

Exide
IRONCLAD
BATTERIES



IF you equip your battery motors with Exide-Ironclad Batteries you will not only speed up your entire haulage system but also cut down the cost of moving each ton from the face to the tipple or breaker. The Exide-Ironclad's speed and pep last all day; its power on grades is great; its charging efficiency is high; its repair cost almost nil; its life long; and its first cost reasonable. Send for free booklet, No. 1791—"Facts for Consideration in Selecting a Battery for Locomotive Service."



This little motor looks as if it might be biting off more than it can chew. In the battery box is an Exide-Ironclad, though, which always has plenty of power for steep grades.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
Exide Batteries of Canada, Limited, 153 Dufferin Street, Toronto

FRANK H. KNEELAND
J. H. EDWARDS
SYDNEY A. HALE
Associate Editors
GEORGE J. YOUNG
Western Editor

COAL AGE

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
R. DAWSON HALL, Engineering Editor

A. F. BROSKY, Pittsburgh
JEROME C. WHITE
LOUIS C. McCARTHY
Assistant Editors
PAUL WOOTON
Washington Correspondent

Arguments for Purchased versus Produced Power	105
By F. R. LOW.	
West Virginia Studies Its Mining Problems at Bluefield	106
By J. H. EDWARDS.	
With Careful Timbering Accidents Can Be Forestalled	109
By FRANK H. KNEELAND.	
Good Coal Needed for Making Powdered Fuel	113
Bits Shaped to Standard and Duly Tempered	
Reduce Mining Costs	115
Hearing in Lake Rate Case Reopens	120
Copeland Assails Latest Coal Policy of President Coolidge	
as Reversal From Stand Taken in 1925 Message	121
Mounting Coal Exports to Britain to End Soon	
Is Washington View	123
By PAUL WOOTON.	
Another Rate War Brewing?	121
Ohio Operators Launch State-Wide Organization	
To Revive Coal Industry	122
Dalrymple Voted Out	122
Charles A. Coffin, Founder of General Electric Co., Dies	122
Erie Coal Segregation May Await Merger	123
Missouri Miners Meet to Form New Union	123
British Coal Strike Drags on as Peace Promises Fail	124
South Penn Mine to Stay Shut, Say Owners, Union Reports	
Lessee Signed Up	124
Glen Alden Cave-In Menaces Homes at Parsons, Pa.	124
Editorials	103
Underground Operations	117
Practical Pointers	119
News Items from Field and Trade	125
Weekly Review and the Market	129
Foreign Market and Export News	134
New Equipment	135

McGRAW-HILL PUBLISHING COMPANY, INC.

Tenth Avenue at 36th Street, NEW YORK, N. Y.

WASHINGTON, Colorado Building
CHICAGO, 7 South Dearborn Street
PHILADELPHIA, 16th and Parkway
CLEVELAND, Guardian Building
ST. LOUIS, Star Building
SAN FRANCISCO, 883 Mission Street
LONDON, 6 Beauveme Street, E. C. 4, London

JAMES H. McGRAW, President
JAMES H. McGRAW, Jr., V.-P. and Treas.
MALCOLM MUIR, Vice-President
EDWARD J. MEHREN, Vice-President
MASON BRITTON, Vice-President
EDGAR KOBAK, Vice-President
C. H. THOMPSON, Secretary

Cable Address: "Machinist, N. Y."
The annual subscription rate is \$3 in the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Porto Rico, Canal Zone, Cuba, Honduras, Nicaragua, Dominican Republic, Salvador, Peru, Colombia, Bolivia, Ecuador, Argentina, Chile, Spain, Panama, Brazil, Uruguay, Costa Rica, Guatemala, Haiti and Paraguay. Extra foreign postage \$3 (total \$6 or 25 shillings). Single copies, 20 cents.

Change of Address—When change of address is ordered the new and the old address must be given. Notice must be received at least ten days before the change takes place.

Copyright, 1926
By McGraw-Hill Publishing
Company, Inc.

Published weekly
Entered as second-class matter
Oct. 14, 1911, at the Post
Office at New York, N. Y.
under the Act of March 3,
1879.

Printed in U. S. A.
Member Audit Bureau of
Circulations
Member Associated Business
Papers, Inc.
Number of copies printed
this issue, 10,322

Publishers of
Coal Age Engineering and Mining Journal
Engineering News-Record American Machinist
Power Chemical and Metallurgical Engineering
Ingenieria Internacional Radio Retailing
Bus Transportation Electric Railway Journal
Electrical World Electrical Merchandising
Industrial Engineer Successful Methods

Journal of Electricity
(Published in San Francisco)
American Machinist—European Edition
(Published in London)

Shall We Step Our Long Faces or Make Them Straight?

In next week's issue of *Coal Age*, H. F. McCullough will say in an article that long faces should be stepped but will add, to use the language of the stonemason, that the correct height of the "riser" and the correct length of the "tread" depends on the roof and is determined on what we want to get, more pressure or less pressure on the coal, reduced weight on the timber or decreased pressure on the roadways leading up to the long faces. All these depend on the inclination of the stairway or what he terms the slope of the gob line.

The control of the roof is the great problem of the hour, especially in deep coal. This is Mr. McCullough's contribution to the problem. He says we have plenty of information gained in practice with room-and-pillar workings where the pillars are big and the rooms quite narrow. The English bord-and-pillar is approximately what we are aiming at in our stepped long-face methods.

What Causes Spontaneous Heating?

Two professors at Lehigh University, H. F. Turner and Eric Sinkinson, have been studying the adsorption of carbon dioxide by coal and they think it has more effect on the heating of coal than the absorption of oxygen. Adsorption of carbon heats the coal and so aids oxidation.



The combination clamp is made with standard $\frac{3}{8}$ -inch boss for attaching to standard hangers. The single bolt clamps feeder and trolley wires simultaneously.

Economy— Flexibility in Trolley Construction

IT takes less time and less material to put up trolley and feeder wires with the new O-B combination hanger and duplex clamp.

You cut drilling in half—one hole where two were necessary. You can suspend the feeder line just above the trolley wire, with one clamping operation, and on the same insulated hanger.

This construction is much lower in cost yet more substantial, neat and practical. Will you let us tell you more of the details?



Cable Sling
Nos. 14845-14846

For a More Flexible Suspension

A similar duplex clamp, without the hanger boss, used in combination with the Bulldog Feeder Sling, provides a flexible, catenary type of assembly. The duplex clamp is applied between hanger supports, thus eliminating hard spots ordinarily existing at points of roof attachment.



Catenary Clamp
Nos. 14635, 14644

Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited
Niagara Falls, Canada

153M

OB IS BOUGHT WHEN SERVICE IS SOUGHT

Ohio Brass Co.

PORCELAIN
INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING
MATERIALS
VALVES

COAL AGE

McGRAW-HILL
PUBLISHING COMPANY, INC.
JAMES H. McGRAW, President
E. J. MEHREN, Vice-President

Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 30

NEW YORK, JULY 22, 1926

Number 4

Industry's Expansion Rests on Sound Basis

CLOSE ANALYSIS of bituminous production for the first half of 1926 detracts nothing from the cheerful picture presented by the comparison of the figures in totality with last year, made in a preceding issue of *Coal Age*. The cumulative total of 271,899,000 net tons to July 3 has been exceeded only once since the World War: that was in 1923, when production established a record for sustained rhythm. If current tonnage rates are maintained—and there is nothing in the present outlook to indicate that they will not, and much to suggest that they may be increased later in the year—output for the twelvemonth will again pass the half billion ton mark.

Compared with the corresponding figure in 1925, the cumulative total to July 3 shows an increase of 34,892,000 tons, or 14.7 per cent. During the first six months of the present year, however, there have been two unusual, and temporary, drafts upon bituminous supplies. The first was the result of the anthracite strike. The second, which still continues, is the result of the stoppage of work at the British coal pits. It becomes pertinent, therefore, to inquire how much of the increase in the American bituminous output is chargeable to these transient, extraordinary demands and how much may be attributed to a genuine expansion in the normal and natural home market for soft coal.

* * *

Operations at the anthracite mines were not resumed until mid-February. Output for the three months ended March 31 was 10,877,000 tons less than during the corresponding period in 1925. Cumulative anthracite production since April 1 has been approximately 3,356,500 tons ahead of last year. These latter figures, however, do not enter into the picture; it was how the deficit of the first quarter of the year was made up that has an important bearing upon the weight to be given the increase over 1925 in bituminous production. During the first three months of 1926 United States imports of anthracite coal exceeded those for the first quarter of 1925 by 759,293 net tons; exports were 423,364 tons less. Imports of bituminous coal and coke showed a gain of 178,928 tons. In other words, increased imports of coal and coke and decreased exports of anthracite added 1,361,585 tons to the supply to be drawn upon by anthracite consumers. This left a statistical shortage of 9,515,415 tons to be made up by the increased production of American bituminous coal and other fuels.

Complete data on exports to June 30 are not yet available. For the five months ended May 31, the increase in bituminous exports and foreign bunker business over 1925 approximated 1,183,817 net tons. June dumpings

for overseas movement and foreign bunkers probably were between 825,000 and 850,000 tons greater than a year ago. In other words, foreign business, including bunkers, was about 2,000,000 tons greater during the first half of 1926. Not all of this can be credited to the British strike. As a matter of fact, it is doubtful if more than 750,000 tons properly may be so credited. It is well, however, to emphasize this tonnage, small though it is in comparison to the total output, because as long as the British stoppage lasts, this movement will be a factor to be taken into account.

* * *

Roughly speaking then, exports and the extra demand for bituminous coal brought about by our own anthracite strike, assuming in the latter case that solid fuels carried the entire load, aggregated 12,000,000 tons. Deducting this from the 34,892,000 tons increase leaves a net gain of 22,892,000 tons, or 9.6 per cent. Moreover, if the comparisons are limited to the first three months of the new coal year, the gross gain over 1925-26 is 12,574,000 tons, or 11.1 per cent. If export increases be eliminated, the net gain becomes approximately 11,446,000 tons, or 10.2 per cent. In pre-war years, a ten per cent increase was recognized by many as a normal rate of growth for the bituminous industry.

This gain becomes doubly significant when set against the greater efficiency in the use of coal in industry. A ton of coal today produces more railroad transportation and more electrical energy than the ton of the careless pre-war days. That coal production should double every ten years, however, no longer seems a reasonable assumption. In industry, no less than in individuals and in nations, with age comes the inevitable slowing up in the rate of expansion. Were this not so, a Malthusian terror would be the bane of existence.

* * *

Increase on a more moderate scale is, nevertheless, certain. That the bituminous industry as a whole should be making such rapid strides in the face of competition, in the face of a desirable increased efficiency in the utilization of coal and in the face of the pessimistic forecasts of the lugubrious souls who wail that coal is entering the black shadows of a steady decline reveals the fundamental soundness of the industry and the underlying prosperity of the United States. It is unfortunate that all sections are not equal sharers in this prosperity and that realizations are not in keeping with the service rendered, but these embarrassments cannot disguise or dim the outstanding fact that the bituminous industry is headed for a better era.

Experience vs. Ideas

NOW AND AGAIN a nation or the world gets a shaking up that causes men to leave one occupation for another, to travel, to look around for a new employer or to undertake for themselves. Such changes lift men out of the old ruts, and suddenly the world or the nation begins, after years of stagnation, to make progress.

Any industry suffers from excessive reliance on past methods, experience, standardization and tradition. The introduction of men from other industries, from other plants in the same industry, preferably situated a long way away, prevents an inbreeding of ideas and begets a readiness to try new plans and methods. The practice of putting managerial positions into the hands of engineers also assists in promoting progress, for the engineer has been taught to look beyond his own narrow experience to the world-wide information and experience of books. He recognizes that his duty is to find better ways and not accept old standards. The coal industry will thrive only by introducing into its operations men from fields afar and engineers who are disposed to travel and to read. How little a man can know who has seen only one or two mines or has never left a single valley or coal field!

We are safe in assuming that our systems of operation and our equipment will need frequent revision. Methods must always change with new materials and tools. With cast-iron boilers, as in James Watt's day, perhaps it was just as well to limit pressure to 10 lb. per sq.in.; with bits of imperfect steel it may be advisable today to keep a low cutting speed; with bad tracks and poor lighting it may be safe to adopt a locomotive schedule of a few miles per hour, but with new equipment the rules must needs change.

A Breathing Spell

THE ADJOURNMENT of Congress early this month without the enactment of any coal legislation was a triumph for those who believe further government interference in industry can only be harmful. It was not, however, a victory where the victors may rest safely on their laurels. Far from it. Success in this instance was a matter of political chance—not the reward of merit or a just cause. The disappointed proponents of federal regulation will be just as eager to press the fight next winter as they were this spring. Postponement has not discouraged them.

The political gods have given the coal industry a breathing spell. It is time that should be profitably employed in strengthening the defenses against renewed attack, which is certain to come. The drive against coal in Congress has been going on for a decade; it is not likely to be abandoned until there is such a decisive registering of public opinion against it that it will be political suicide to continue the assault. Then, and then only, can the coal industry hope for legislative peace.

Public opinion cannot be enlisted effectively in defense of business unless public opinion is properly directed. Today, for the most part, public opinion, where it is not neutral, is antagonistic to coal largely because the public has been fed upon half-truths and misstatements. It will take an unremitting campaign of education to change this state of mind. No indi-

vidual or small group can undertake this campaign with any reasonable expectation of success. Associated effort, such as is possible only through organizations like the National Coal Association, the American Wholesale Coal Association and the National Retail Coal Merchants' Association, alone can win the day.

These organizations already have done good work under great difficulties; how successful they will be in the future depends upon the support they receive from the industry. There are coal men within and without these organizations who are willing to exchange the hard struggle of independence for the fancied security of government supervision. Many of these are just as sincere in their belief that regulation is the road to an assured profit as the foes of federal control are in their knowledge that regulation would be strangulation. Exposure of the futility of confidence in government regulation, therefore, is one of the tasks confronting the industry.

Above all, there must be a keen sense of the industry's responsibility to the public and an eager recognition of the opportunities for further and better service to the nation. If business can set concrete achievements against political pretensions of an industrial millennium under an era of bureaucracy, clamor for legislation will awaken no response among the citizen Warwicks who make and unmake Congresses. Service to the public is the real test. Men who are proud of their calling will neither sleep on their obligations, evade an accounting of their stewardship nor shrink from battling for their freedom.

On the Move

WHAT MAN having a store empties the goods on the shelving and then opens another store behind or alongside the first to empty the shelves there also and again pass on? But that is mining, a continued progression from place to place. There is a degree of permanence, for the doorway of the mine moves not at all and all the stores successively opened must pass their goods through the original door.

Comparing mining with merchandising the fact that the saleable goods in mining are in stock and stationary and the goods in the merchant's store when depleted are replenished on the shelves from which the original goods were removed explains why the operator is not able to spend money as freely as the merchant in obtaining favorable working conditions and operating conveniences, though some of the difficulties of the operator such as haulage are of a character to make the expenditure of money not only excusable but highly profitable.

FOREMEN ARE LARGELY what we make them. If they are given too much to do, they will wait to act till something unfortunate happens, but if they are given opportunity to pick up with their work, they will be enabled to use preventive methods. If their forces are cut to the bone, they will repair after disaster, rather than repair to prevent it. Some foremen, of course, would do no better, however adequately their mines were staffed. They have no idea of the necessity for fore-stalling trouble, and glory only in their ability to meet a difficulty after it has developed. Some would rather put out a fire than prevent one, would rather energetically replace a wrecked trip than keep a good track. One needs to be on one's guard against such men.

Arguments for Purchased *versus* Produced Power

From POWER June 22, 1926

AN ARGUMENT that is used with telling effect by the salesman of central-station current is that the money that would have to be invested in a power plant, in the case of a new installation or in the reorganization on modern lines of an existing plant, would yield a larger return if invested in the productive processes of the business.

This is probably true if the business is assured of a generous profit and if it has little use for steam for heating and manufacturing processes.

But it is pertinent only if the prospect's credit is limited or if the business is profitably capable of expansion to an extent that will absorb all his available means.

If he has enough money available, above what he can advisedly invest in productive machinery, to include a power plant in his new enterprise or to reorganize his present plant along efficient lines, he may find that he can earn a handsome profit by generating his own power.

True, the cost of power is a small percentage of the total cost of production in many industries, but it amounts to a considerable sum when expressed in dollars per annum.

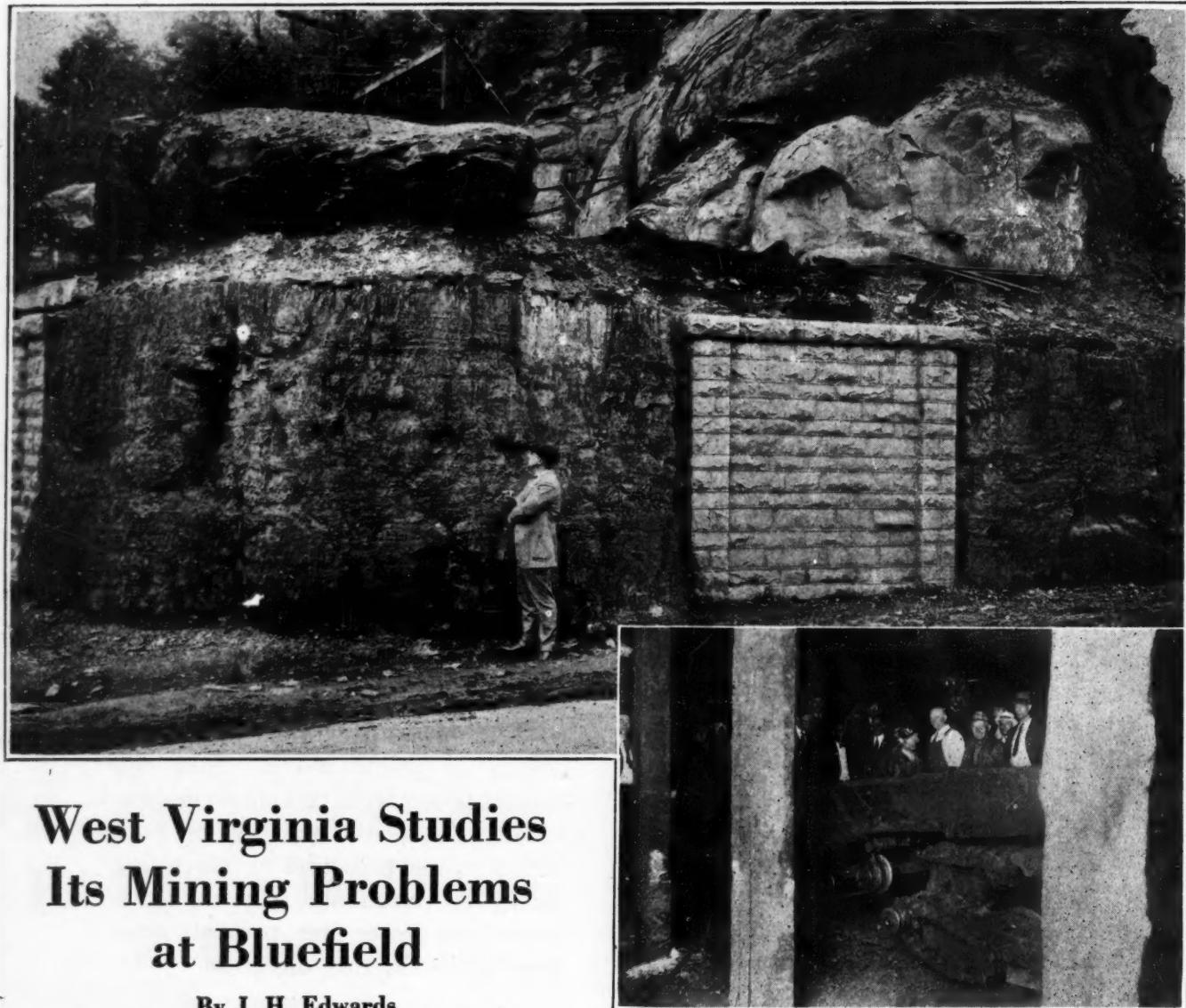
And, in the broader view, it is an economic crime to pour into the rivers vast quantities of heat that might be usefully applied.

The demonstrated practicability of generating steam at high pressures and temperatures and the availability of prime movers that can extract power from this steam and exhaust it in a still superheated condition and at pressures at which live steam is commonly generated for other than power uses, presents large possibilities in this direction.

Then there is the fact that the user of purchased power is to an extent foot-loose. If his business goes to pot within five years, he will be better off not to have put additional money into a power plant.

If this prospect is imminent, he would be better off not to go into it at all. But if the enterprise thrives for five years, he ought to get back the cost of a good steam plant and have it free and clear for the rest of its useful life, in the case of many existing plants and of projected ones where a demand exists for heat.





West Virginia Studies Its Mining Problems at Bluefield

By J. H. Edwards

Associate Editor, *Coal Age*, Huntington, W. Va.

How Accidents Can Be Lowered by Systematic Effort—Methods That Will Make Shooting Effective—Sand vs. Clay Tamping—Rock Dust Costs at Glen Rogers Mine—Davis Mines Cut Accident Rate.

ONE DAY in technical session and another making inspection trips, constituted the program of the West Virginia Mining Institute, at Bluefield, W. Va., July 13 and 14. The registered attendance was 147. With Robert M. Lambie, chief of the state mine department, as president, the program included several subjects vital to the promotion of mine safety. In the absence of Ruel E. Sherwood, secretary-treasurer, J. H. Edwards, associate editor of *Coal Age*, acted as secretary.

In opening the meeting and introducing the first speaker, L. M. Brown, state mine inspector, Wheeling, Mr. Lambie urged the organization of more safety clubs. He said that the state department is now well started on a determined campaign to prosecute all violators of

the mining laws. "Mine Management and its Relation to Safety and Efficiency," the paper by L. M. Brown, emphasized the part efficient organization plays in reducing accidents. He urged that each man have a clear understanding of his duties and responsibilities to everyone in the organization. A chart should make this clear to every employee.

Quoting from the paper: "A certain coal company, having a number of mines in West Virginia, twenty years ago, during the early days of development at its several plants, produced 46,907 tons per fatal accident. Since that time it has been striving continuously to reduce its accident rates, and during the last year (1925) it produced 538,840 tons per fatal accident, or eleven times as much coal per fatality as it did twenty years ago."

"At one of its mines it has produced nearly 6,000,000 tons since it had a fatal accident. This same company produced 1,300,531 tons this year (1926) without a fatality. The average for all West Virginia mines for 1925 was 258,000 tons per fatal accident."

"Had West Virginia equalled the record of this com-

The main headpiece shows the coal of the original Pocahontas mine at Pocahontas, Va. This mine was the first opened in all the Pocahontas field. The date of that important event was 1883. The coal varies from 8 to 15 ft. in thickness. The side illustration shows part of the delegation in the Delta Mine with the Coloder which was seen in operation. The white collars and street hats are explained by the fact that the party entered the mine by a short cut through a drift opening near the workings. The man in the center with the exposed front of white shirt and bow tie is Prof. C. E. Lawall of Morgantown. Directly behind him is Prof. Howard Eckfelt of Lehigh University.

pany in 1925 only 232 fatalities would have occurred in the state last year instead of 485, a saving of 253 lives for that year. And further, had West Virginia averaged up to the standard of the one mine cited there would have been only 21 fatalities instead of 485, a saving of 464 lives or 95.6 per cent of all fatalities.

Dr. J. J. Rutledge, chief mine engineer, Maryland Bureau of Mines, said that, during the last year, in his state an inquiry had been held into each serious accident, thus impressing the men with the seriousness with which the state department regards accident prevention.

"Development, Use and Misuse of Coal-Mine Explosives," was the subject of an excellent paper by R. H. Magee, of Mt. Hope, technical representative of the Grasselli Powder Co. He dealt in a general way with the manufacture and consumption of explosives and then made specific recommendations as to their proper use.

"The question is often asked," he said, "How should a shot be placed? Owing to the unevenness of coal seams, irregularity of cracks, bone, slate, and sulphur streaks, such a question is difficult to answer without experimental work in the seam in question, but for general purposes I would suggest: (1) Remove all bug dust from the cut; (2) drill a breaker hole when needed and charge light; (3) drill rib holes 12 to 18 in. from and parallel to ribs; (4) drill all holes 9 in. less than the depth of cut; (5) when seam is thick, snub by hand or by snubbing shot. Nothing can be said as to the number of holes or the charge of explosive that should be used. The physical conditions of the seam will determine this."

USE LARGE DRILLHOLE

As to the use of air spacing and of blasting tubes to provide cushioning space with high explosives, Mr. Magee's recommendations are summed up in the following remarks: From my experiments I believe the best method is to use a drillhole of a diameter $\frac{1}{2}$ in. larger than that of the cartridge. After the charge has been placed, one, two or three loose dummies of moist clay are placed untamped against the charge. The pressure is increased as more dummies are used, until at the mouth of the drillhole the stemming is tamped firmly. The number of loose dummies used depends on the thickness of the seam, the depth of the cut, the texture of the coal, the speed and strength of the explosive. It may require one or as many as three. As gases form from the explosion the loose dummy is compressed making the required air space. Fouling the first dummy is often disastrous, the use of blasting tubes is an added expense, whereas the use of clay stemming is only common sense."

C. M. Gates, general manager, Central Pocahontas Coal Co., Caples, W. Va., suggested that a cone cartridge put in the drillhole with the small end against the explosive and with the balance of the stemming tight,

provides a good method of air spacing. Mr. Magee agreed as to the effectiveness of this method of loading but said that the average miner has trouble in making a cone-shaped cartridge.

Asked for concrete examples of any companies making up clay dummies and furnishing them to the miners, Mr. Magee said he knew of no company doing this but told of one firm that furnishes the cartridges to the men to load themselves.

Arthur Mitchell, mine inspector for the Pocahontas Fuel Co., said that in that company's mines the loaded dummies are furnished to the places using loading machines but that the miners must make their own. W. H. Forbes of the U. S. Bureau of Mines, Huntington, stated that he had been in two mines where dummies were loaded outside or by trapper boys and sent to the miners. Mr. Magee cited Technical Paper No. 17 of the U. S. Bureau of Mines which states that moist clay has been found to be

the most efficient tamping material.

E. H. Johnson, mining engineer with the Coloder Co., questioned the recommendation that holes be drilled 9 in. less than the depth of the undercut, and asked if the West Virginia law did not state that the explosive must be in the back end of the hole which means that any air spacing must be toward the front. Mr. Magee said that the 9-in. recommendation is but a general rule and that in certain coals this must be changed to 4 or 5 in. and in extreme cases the hole must be drilled to the full depth, to prevent overhang. He said that an air spacing in the back end of a hole will in many cases result in an overhang.

W. J. German, of Huntington, technical representative of the du Pont company, said the solid tamping should equal the thickness of the coal seam. He added that at many mines the first and most important item of preparation, namely, shooting, receives the least attention. At least six mines in West Virginia use damp sand for tamping. Unless the coal is unusually thick this material does fairly well. In many mines a supply of moist sand can be picked up along the track at points of stiff grade. The Pocahontas Fuel Co. makes thousands of dummies every day. These are filled by the trappers and sent to the loading-machine crews. Mr. German thinks it impracticable to require the miners to fill their own dummies.

OLD DUST STILL EFFECTIVE

Four papers were read at the afternoon meeting. The first, "Rock Dusting of Coal Mines," by John E. Jones, safety engineer of the Old Ben Coal Corporation, of Illinois, and recently of West Virginia, left no room for argument as to the efficiency of rock dusting. Mr. Jones gave the following figures covering the initial rock dusting of the Glen Rogers mine in West Virginia, and added that the first dusting is of course the most costly:



Bluefield, W. Va., as Seen by a Sky Pilot

Level ground is at a premium in this locality so the plane from which this aerial photo was made had to use Roanoke, Va., 120 miles away, as a base.

"Linear feet of passageways dusted, 60,000; tons of dust used for coating, 116.5; pounds of dust per linear foot, 3.9; number of troughs used, 1,082; pounds of dust in each trough, 62; dimensions of trough boards, 1x8x72 in.; number of barriers installed, 68; tons of dust used in troughs, 33.5; cost of trough barriers, \$578; cost of dust, \$1,230; cost of labor, \$1,280; total cost \$3,088."

Rock dust that had been in barriers for nine years, Mr. Jones said, was practically as good as when first placed. Sweating of the mine causes a hard surface to form, perhaps $\frac{1}{8}$ in. thick, but this can easily be punctured by a slight push of the finger. If water actually drips on the dust in a barrier, the dust will gradually be cemented into a hard rock. He added that a general mine explosion was prevented at New Orient by rock dust. Within 25 ft. of the rock-dusted zone, signs of coked coal disappeared.

J. P. Horne, general superintendent of the Eccles mine said that the Crab Orchard Improvement Co. had dusted 10 miles of entry.

After an investigation of several kinds of rock dust that from Marble Cliff was selected, even though the cost of this dust is nearly \$3 per ton more than that of others. This product was chosen mainly because of its better light-reflecting qualities. After being dusted with it an entry appears almost as if whitewashed.

A paper by C. A. McDowell, manager, industrial relations department of the Davis Coal & Coke Co. followed this discussion. The accomplishment of his company he summed up in this statement: "Our fatality rate per thousand employees has been reduced from the high peak in 1918 of 5.35 to 1.38. That per million tons of coal produced has been lowered from the high peak of 6.45 to 1.65. The severity rate (days lost per thousand hours worked) has been reduced from the maximum rate of 25.8 to 10.5. The frequency rate (number of accidents per million hours worked) has been reduced from the high peak of 83.1 to 51.1." Mr. McDowell said that, though he could give no figures, he was convinced that the work was not expensive. From 1917 to 1922 he handled the work alone. Since 1922 he has had the help of one man and a stenographer but has assumed other duties. Dr. Rutledge said that in one of the Davis Coal & Coke mines he saw miners as well as officials wearing self-rescuers. Mr. McDowell stated that the publication of the names of the men who have been victims of accidents has proved a strong factor in causing the employees to exercise more care and thought.

DIOXIDE AND METHANE BOTH INCREASE

William Yant, chemist, U. S. Bureau of Mines, delivered an address on "Observations of Mine Gases at Hornung and Eccles Disasters," exhibiting charts and curves of frequent analyses of the atmosphere inside the sealed areas of these two mines, and drawing conclusions as to the critical periods in handling fires in gassy mines.

"The most dangerous time at any mine fire is during the procedure of sealing and the relatively short critical period following in which the methane may accumulate in quantities which lie inside the flammable range while sufficient oxygen is present to support an explosion. Whether an explosive atmosphere will be created depends, of course, on the rate at which methane is liberated and the oxygen consumed by the fire, together with the influence of the carbon dioxide formed by combustion. The flammable limits of methane are influenced markedly by both the decrease in oxygen and the presence of carbon dioxide, when these are present in the usual quantities found in sealed areas."

IF METHANE WINS THE RACE

Following Mr. Yant's paper "Jack" Ryan of the Mine Safety Appliances Co., gave a brief talk on the best method of sealing a fire. He cautioned against any preconceived ideas as to the exact way of fighting a mine fire. "Generally speaking," said he, "don't delay



After Trip into Delta Mine

When this photograph was made some of the party were still in the mines. Robert M. Lambie selected a seat directly in front of the "Play Safe" poster on the bulletin board. In front of him and to his right is William Yant and at his left is C. B. Huntress. The "big boy" in overalls is L. W. Brown of Wheeling.

and the increase in methane to 5 per cent."

The last talk of the session, by George Richardson of the Bethlehem Steel Co., "Steel and Its Use in Coal Mining," was illustrated by motion pictures taken in the Bethlehem mines and in the mills and shops of the company. Mr. Richardson urged further standardization of mine supplies and equipment and illustrated by pictures how such standardization cuts the cost of track materials, mine cars, and rolled-steel wheels.

He recommends that cast-steel frogs be used in all cases except where the rails are of the rerolled type and not strictly to gage. In the construction of steel or part-steel mine cars, copper-bearing steel should be used for parts $\frac{1}{8}$ to $\frac{1}{4}$ in., or less, in thickness. With acid water this will almost double the life of such parts.

Over two hundred persons attended the banquet. Dr. J. J. Rutledge presided as toastmaster. Among the prominent speakers were C. B. Huntress, director of information service, National Coal Association, Washington, D. C., Howard Eckfeldt, professor of mining engineering, Lehigh University, and C. E. Lawall, head of the mining department at the State University.

On Wednesday about fifty of those who came to Bluefield for the meeting were taken on an inspection trip. The chief points of interest were the Jones Coloder which was seen at work, the Delta mine of the Pocahontas Fuel Co. at Switchback, and the dry-cleaning plant of the American Coal Co. of Allegany County, at McComas.



Left, Timbering on Entry near Mouth of Room; Below, Timbers on Room Roadway.



With Careful Timbering Accidents Can Be Forestalled

Falls of Roof Responsible for Most Mine Accidents—Careful Supervision and a Sense of Responsibility Do Much to Eliminate Them—Cap Pieces Should Support Face Rock and Roof Over Track

By Frank H. Kneeland

Associate Editor, *Coal Age*, New York, N. Y.

BRADLY SPEAKING, falls of roof and coal are responsible for the death and injury of as many miners and underground workers as all other causes put together. Ever since mining began the big problem of the engineer and manager has been that of roof control. The forces encountered are so vast that few materials available are sufficiently strong to resist them. Fortunately, however, they act slowly, and an appreciable time elapses between the removal of the coal and the development of maxi-

mum disturbance. This affords opportunity to manipulate the means at hand so as to avoid disaster. In any case, therefore, the coal must be relied upon to actually support the overburden. Timbering or other artificial supports, however, are used to hold up any fragments of roof that may become detached until such time as the cover may be brought down with safety. In many instances advantage is taken of the spring, or bend, of the roof to bring down the coal either with or without the aid of explosives.

Timber has always been the means employed for holding the roof temporarily, and it is doubtful if an entirely satisfactory substitute will be developed, although many experiments have been and are being made with this

The upper illustration in the headpiece shows where a room neck debouches onto a heading under bad roof. As the span is long and load considerable heavy timbering is necessary. Lest a wild trip knock out the legs of the 3-piece sets, they are hitched securely into the rib. The lower illustration shows a room neck. The timber is not peeled for long life is not necessary. Note the "safety line" 3 ft. above floor.



Fig. 1—Subforeman Directs Timber Placement at Face

The miner is shown wedging a timber in place against the roof under the personal supervision of the subforeman. Telling the workman where to place the next prop or props is not enough—the boss must see to it personally that his instructions are carried out to the letter in a proper and workmanlike manner.

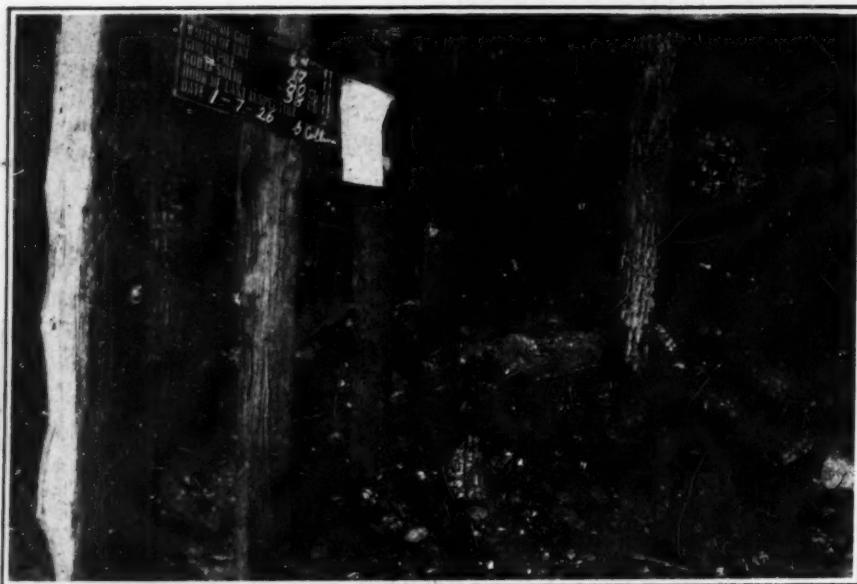


Fig. 2—Face as It Appears After Coal Has Been Shot Down

This is the same face as that shown in Fig. 1 as it appeared after the face had been brought down ready to be loaded out. Props are set close to the face before shooting and all shots are loaded lightly. The object sought is to break the coal down rather than to kick it out onto the floor. If any of the props are knocked out by any of the shots they must be reset before the next shot is fired. Adequate support for the roof is thus assured at all times. Note the safety board in the upper left foreground.

end in view. Steel and concrete, both plain and reinforced, have, of course, been extensively employed with excellent results where permanency is desired, but for ordinary work in rooms and headings timber is still used and doubtless will continue to be thus employed for many years to come.

PROPS AND THREE-PIECE SETS

In coal mines where the beds lie flat or nearly so, as a rule, only two arrangements of timber are used. These are the simple post or prop either with or without cap and foot pieces, and the 3-piece set. The first is employed in rooms and other places where an open and clear passage is not absolutely essential, whereas the second is employed where an opening must be maintained. The 3-piece set is used almost exclusively on headings and roadways, and the prop almost exclusively in rooms.

Although both of these supports are extremely simple they require the exercise of judgment in their placement and care in erection if satisfactory results are to be obtained. In many respects improperly placed or inadequate supports are more dangerous than none at all, for the obvious reason that they afford a false sense of security.

Naturally the necessary strength of timbering cannot be calculated. The only criteria by which it can be determined are the results of experience gained under similar conditions of span, roof consistency, weight of overburden and the like. Such

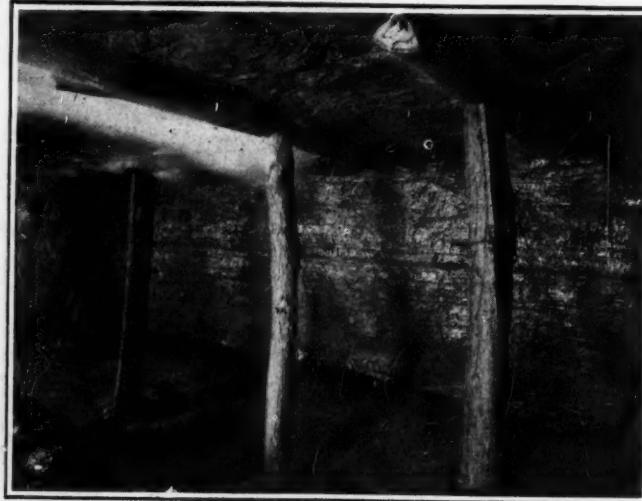


Fig. 3—Cut Cleaned Up; Caps Project Toward Face

Here all of the coal, bug dust and gob have been cleaned away from the face and everything else made ready for the undercutting operation. For this purpose the props are all 6 ft. from the face with cap pieces set parallel to the room center thus leaving only a short unsupported span between their ends and the face. The miner's first job upon his return will be to set props close to the face as shown in Fig. 1. The 6-ft. open space behind the face gives room for the shortwall machines.

conditions may vary widely from mine to mine in any particular field or from place to place within the same mine. Not infrequently they are complicated by local fractures, fissures and slips in the roof strata immediately overlying the coal. When such a condition is encountered much heavy timbering may be required. In any case it is always safest to err on the side of too much rather than too little roof support.

Various kinds and methods of timbering are here illustrated. The illustrations in this article are all from photographs taken in the mines of one coal producer, the United States Coal & Coke Co., with headquarters at Gary, W. Va. Although probably not applicable to all conditions, they depict practices that have been thoroughly tested and found to be adequate in the operations and under the conditions where they are used. The upper illustration in the headpiece shows timbering in room

headings and in room necks where the roof is bad or treacherous and where as a result it must be supported with care. It will be noted that the legs are hitched or channeled into the rib. When treated in this manner they are much less liable to be knocked out in case of a wreck. Such displacement of a leg is likely not only to precipitate the timbers above onto the wrecked cars but possibly many tons of rock as well.

One other detail appearing in this illustration is worthy of note. Along the rib at the left will be seen a white-washed line about 4 in. wide and 3 ft. from the floor. This is the danger line or rather marks the boundary of the danger zone. Accident records have definitely established the fact that a fall of face or rib in order to be dangerous must come from some point 3 ft. or more above the floor. This line, therefore, marks the lower edge of this danger zone. That portion

of the perimeter of a room or heading which lies below this line is innocuous, and no particular attention need be paid to it; that which is above it is dangerous and will bear watching at all times.

The lower of the two illustrations in the headpiece shows the timbering within the room neck. This is similar in every way to that employed on the heading except that because of the shorter span it can be made lighter. Even here, however, the legs are hitched into the rib so as to be protected from injury. In this picture the danger line apparently terminates. As a matter of fact it is extended periodically and is kept up as con-

scientiously as the line of sights.

Three-piece sets and other timbering should be placed as carefully and skillfully in rooms as in headings and other narrow passages, for it is within the rooms that most of the men work. In Fig. 1 the miner, working under the direct supervision of the subforeman, is setting a post close to the face preparatory to blasting. In these mines a subforeman is assigned to every 20 to 40 men, the exact number depending upon how widely the working places are scattered. It is the duty of this official to see personally that all timbering is properly set and wedged in place.

These officials are paid a salary and a bonus—but this bonus must be earned. Every accident occurring in the section under each subforeman's charge counts against him by a scale of demerits weighted according to its seriousness. The arrangement is such that in order to receive the maximum sum, each subforeman must have a clean record for at least six months. Alibis and excuses "do not go," but any man who is "habitually unfortunate" does. In other words a man who cannot keep his record reasonably clear of accidents, even those of a minor character, cannot retain a position as a subforeman. As a result these men are constantly "on their toes" and pay careful attention—as the one here shown is doing—to even such apparently slight details as wedging a cap piece in place.

This illustration is from a photograph taken in a 17-ft. room the face of which had been undercut. Experience in this field has demonstrated the necessity for systematic timbering. The time-honored practice of allowing the miner himself to set timber in accordance with his own judgment has long since been abandoned by this company. Thus in a 24-ft. room at least three rows of timber must be placed. The track is carried along one rib so as to serve in drawing back the pillar. The first row of posts is placed 7½ ft. from this rib the posts being 3 ft. apart in the row. They are provided with cap pieces at least 6 ft. long extending at right angles to the track. Their ends are thus within 4½ ft. of the rib.

The second row of posts is placed 5 ft. from the first row, the props in this row being 6 ft. apart. They are provided with 4-ft. cap pieces set parallel to the track. The third row of posts is 5½ ft. from the



Fig. 4—Looking Toward the Face in a Room

Props set along the track are spaced 3 ft. apart in the row. Their cap pieces are set at right angles to the room line and thus extend outward over the track. Note the safety line on the right rib.

each of 40 watts and 110 volts are maintained close behind each working face throughout the mine.

LIGHT FACE AND NECK OF ROOM

These with one at the room switch, are connected in series to the 250-volt trolley line; the two at the face are moved up after each shot. The reel shown is of great assistance in moving them forward. The conductors supplying current to those lamps are No. 14, rubber-covered, single-braid wire supported on porcelain knobs spaced not over 30 ft. apart. Weatherproof sockets are used exclusively for holding the lamps. Electric lights are also placed permanently at each room switch, at 100-ft. intervals along all straight heading track and at 75-ft. intervals on all curves. The mine is thus electrically lighted throughout and barring accident to some of the circuits a person can walk through an entire opera-

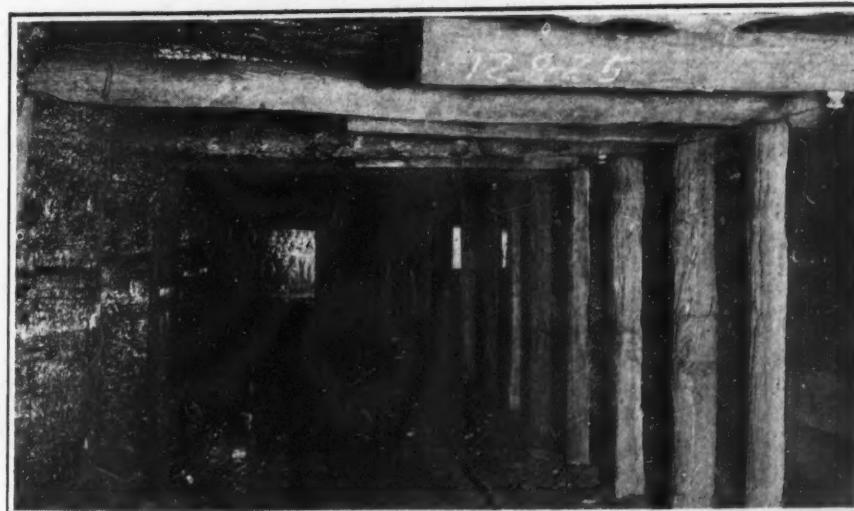


Fig. 5—With Bad Roof, Timbering Over Track Is More Elaborate

Here the roof above the track was so tender that alternate cap pieces over the track row of props have been made long enough to reach the rib where they are supported by posts hitched into the coal.

second, the spacing in the row and the length and arrangement of cap pieces being the same as in the second row.

The arrangement of timbering just described represents the minimum that may be used. Under bad or treacherous roof more posts or 3-piece sets may be employed wherever in the judgment of the subforeman such extra support is necessary. The idea followed is that the quantity of timber specified in the regulations will be sufficient in most cases, but if unusually bad roof is encountered enough props should be set to keep it in place.

Another detail in this illustration deserving of mention, is the reel for light wire that may be seen near the upper left-hand corner. Two electric lights

tion without a cap lamp. This kind of mine illumination alone constitutes a safety measure or precaution of no mean proportions.

Fig. 2 shows the same room and same undercut as Fig. 1 but was taken after the face had been shot down. These faces are usually brought down by three shots fired singly. An inspection is made after each shot, and any post knocked loose must be immediately reset. The roof is thus adequately supported at all times. The inspection board has been put in place by the sub-foreman and upon it has been pinned the daily safety bulletin. A letter of this kind is sent out each day from the main office and a copy thus posted in every room. Among other subjects these bulletins describe accidents that occur in various mines of the company and tell what should have been done to prevent them. They constitute a potent means of inducing the men to think safety—and experience has shown that he who habitually thinks safety is safe.

SIX FEET IS LEFT FOR UNDERCUTTER

In Fig. 3 the room has been cleaned up and posts set ready for the undercutter. These props are 6 ft. from the face which leaves just room enough for the operation of the mining machine. It will be noted that some of the cap pieces are placed parallel with the track or perpendicular to the face. This arrangement leaves only a short span of unsupported roof immediately behind the face. These caps may be turned at right angles when the next set of timbers is put in place or after the face has been undercut.

Fig. 4 is a view in a room looking down the track toward the face which has been undercut and timbered ready for shooting. Note the neat, orderly, businesslike appearance of the row of timbers at the left. Systematic timbering is conducive not only to safety but to confidence and good morale as well.

Fig. 5 is a view in another room driven under treacherous roof. Here it will be noted that every other cap piece is made long enough to reach entirely across the track and its end supported by a post that is hitched into the



Fig. 6—Drawing Pillar by Pocket and Stump

Pockets driven through the pillar in the process of drawing it back are virtually little rooms and must be timbered accordingly. The system employed in setting timbers in these places is, therefore, practically the same as that followed in the rooms.

When a room has been driven to its limit, or as it would be termed in some regions when first mining has been completed, much less than half of the coal has been extracted. Mining is therefore prosecuted upon what has often been called a "continuous advancing and retreating system." Rooms are driven up in sequence, the faces of adjacent rooms being stepped or arranged one in advance of the other. As each room is completed its pillar or the one close beside its track is immediately drawn back. This is done by the "pocket-and-stump" method of pillar extraction. Here again timbering must be careful and systematic.

Fig. 6 shows the standard method of timbering a pocket. It will be observed that the arrangement of props is quite similar to that employed in rooms. As a matter of fact one of these pockets is practically a little room and must be treated accordingly.

Fig. 7 shows the type of timbering frequently used to hold the roof after a heavy fall. In this case the mine passage has obviously been driven under a "slip" known locally as a "horseback." The roof accordingly has "sheared out" along two planes roughly at 90 deg. to each other and at 45 deg. to the horizontal. This leaves an inverted trough-shaped opening in the roof which may or may not parallel the course of the mine passage.

If such a channel in the roof is long and roughly parallels the passage below, it may be supported by means of superimposed bents built one above the other. For sustaining short stretches of this kind, however, cribbing such as that shown

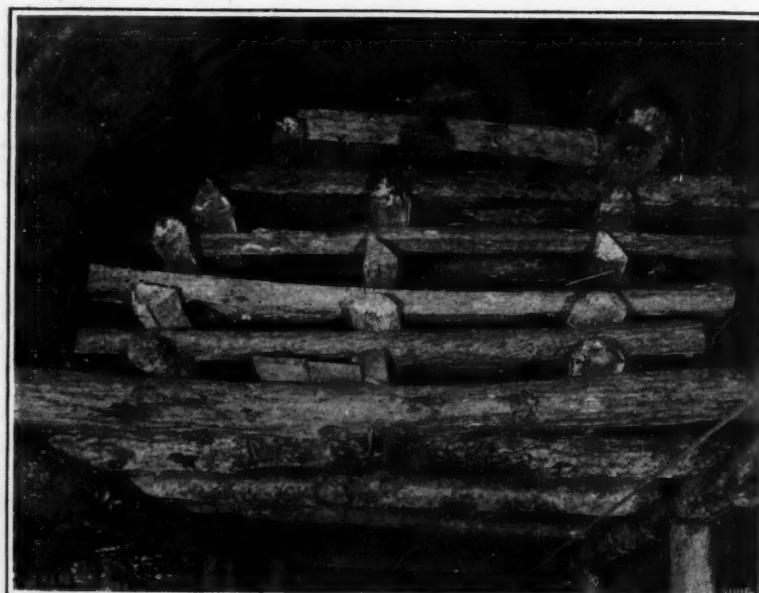


Fig. 7—High Cribbing Erected After a Heavy Fall

This shows one method of supporting the roof after a fall. If the cavity resulting from slips in the roof is both long and high it may be filled and the roof above it supported by building superimposed bents much resembling those of a bridge or trestle. In the case of a comparatively low cave such as the one here shown cribbing on top of cross pieces as here depicted in most cases will answer every purpose.

coal. This gives excellent protection over the track.

In these mines rooms are driven from 18 to 24 ft. wide on 72-ft. centers. In many operations the length would be considered extreme as it ranges from 500 to 700 ft. Only one crosscut is driven, air being carried to the face by means of line brattice. Such a brattice, built of boards may be seen at the right in this picture. Here also the light wires suspended on porcelain knobs and leading to the face can be plainly seen. These face lights are moved forward as the room advances and then brought back with the pillar.

answers the purpose admirably and may be erected with greater dispatch.

One detail of the timbering shown and one that has a certain, although perhaps a secondary, bearing upon its cost and life, has not been mentioned. Looking closely at the illustrations it will be observed that all or practically all of the timbers appearing in upper illustration of the headpiece have been peeled whereas in most instances in the other figures the timbers still have the bark on. The reason for this is obvious.

Removal of the bark from a mine timber entails a certain amount of expense, but a stick so treated will last longer when placed underground. The first illustration shows heavy timbers on a heading, or what might be termed permanent roof supports, as such a passage, under ordinary circumstances, must be kept open and in use for several years. Accordingly the timbers used are peeled before being brought into the mine. Room necks, rooms, pillar pockets and the like, on the other hand, are of a temporary nature, the rooms being driven and the pillars brought back as quickly as possible. It is practically never advantageous to leave rooms standing if this practice can be avoided. In these mines an unpeeled timber will last as long as it is necessary to keep open the passage in which it is

used, so why go to the unnecessary expense of peeling?

By many coal-producing companies timbering and roof support is considered a necessary evil, and the temptation is always great to slight it and use just as little roof support as possible. Falls are not only dangerous but are always expensive to clean up. Furthermore retimbering after a fall is more costly than adequately supporting the roof in the first instance. When such falls occur on headings or haulageways they almost invariably entail a far greater indirect loss in the form of interruption to operation, loss of output and damage to morale than is represented by the direct expense of cleaning them up. They should therefore be avoided by all means possible.

So far as room timbering is concerned though it is extremely simple in both theory and practice it nevertheless demands care and attention to detail as well as procedure along a carefully considered plan to render it reliable and effective. When it is considered that roughly half of the danger to life and limb encountered within the mines arises from falls of roof and coal and that by far the greater portion of this peril is in the rooms it is plain to be seen why systematic timbering has been adopted and is being scrupulously followed by those who make "safety the first consideration."

Good Coal Needed for Making Powdered Fuel

Many are disposed to believe that any kind of coal can be pulverized satisfactorily for combustion in a furnace and indeed that is true but one manufacturer at least, the Ohio Brass Co., finds that it pays to select the best fuel for that purpose and that the thermal content is not the sole consideration. Of course for reverberatory furnaces it pays to buy coal that has a low ash and sulphur content but that is not the only use that demands the right kind of fuel. For steam purposes it has found that it is best to use certain grades of coal suited to the pulverized coal furnace.

During the year 1925 two grades of coal were used. One had moisture 2.74 per cent; ash, 3.50; volatile matter, 37.88; fixed carbon, 56.80; sulphur, 0.45 per cent; B.t.u., 14,000 to 14,500; and fusion point, 2,584 deg. Fahr., specific gravity, 0.375. Another had moisture of 2.9 per cent; ash, 6.5; volatile matter, 33.15, fixed carbon, 60.26 and sulphur, 0.48 per cent; B.t.u. 14,000 to 14,500; fusion point, 2,550 deg. Fahr. and specific gravity, 0.4369.

During the first six months of the year the second grade of coal was used for the most part, but on account of its erratic behavior at the melting furnace, its use was discontinued and the first grade was used instead. For firing the boiler the second coal gave good results but did not equal that given by the first coal.

It will be noticed that there is little difference in the analysis of the two coals. They both carry the same heat units. The physical characteristics, however, show considerable difference. The first is uniform, all lumps showing a similar fracture and color. The second shows a difference in color and there is a marked difference in the fracture. Many of the lumps show a stratified condition and analyses of the various strata show a considerable variation in composition. Certain stratified lumps show areas which, on analysis, give an ash content as high as 33.42 per cent.

In the use of the second coal a peculiar condition was noted. A precipitation took place on top of the metal bath. This precipitate was not a slag but a finely divided material, resembling flake graphite in appearance which acted as a blanket. Following is the analysis of this material:

	Per Cent
Silicon dioxide	23.31
Iron and aluminum oxides	13.90
Calcium oxide	nil
Magnesium oxide	1.63
Fixed carbon	59.46
Volatile matter	0.76

The arrangement of the pulverizing equipment was such that the two grades of coal could not be separated; therefore, on account of the metallurgical requirements, it was necessary to standardize on one grade only and the first grade was chosen. This coal comes from the Elkhorn district, Eastern Kentucky, and at no time has there been an erratic shipment received. The coal is remarkably uniform and check analyses are obtained from car to car.

As stated before, two 350-h.p. Sterling boilers are fired with powdered coal. The Lupulco system is used. The boilers operate on a rating from 50 per cent to 200 per cent of normal capacity.

The following data as to operation of pulverizing equipment and furnace and cost of both will be of value. The items of interest on the investment and depreciation are not shown.

	Tons
Total coal pulverized	8,400
Total hours drier operated	1,186.75
Total hours mill operated	2,086.00
Total tons of coal dried per ton of coal	128.05
Total hours operator worked	3,704.00

COST PER TON OF PULVERIZING 8,400 TONS OF COAL

	Costs per Ton Coal Pulverized
Operating labor	\$0.2850
Repairs to building	.0005
Repairs to machinery	.0119
Repairs to plumbing	.0002
Maintenance of building	.0040
Maintenance of machinery	.0030
Maintenance of electric wiring	.0097
Alteration to building	.0030
Unloading, handling coal	.0998
Miscellaneous	.0004
Total supplies	.0400
Total power	.6540
Pulverized for drying	.0500
Air for transporting coal	.0700

Permissible Cutting and Hauling Equipment in Mine Of Consolidation Coal Co. at Coalwood, W. Va.

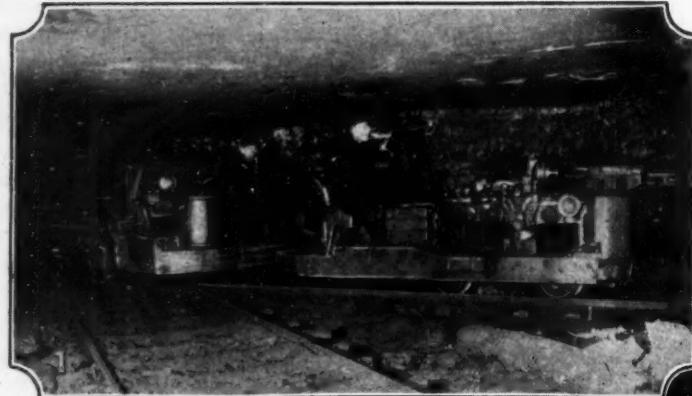
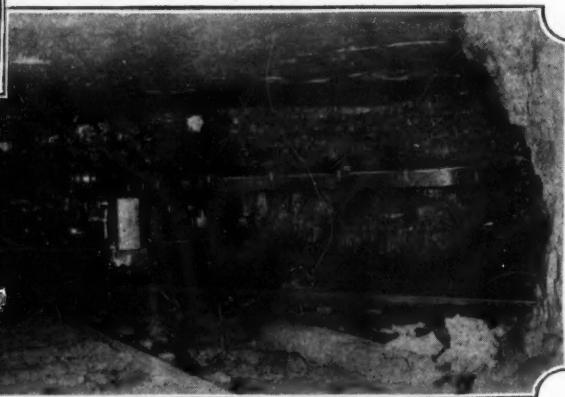


Fig. 1 shows permissible cutting unit traveling to face. This self-propelled power truck carries a 110-cell 31-plate lead battery which contains more than enough energy for one shift. As the cutting machine is an arcweld and remains on the track while cutting, the connections between the truck and machine are not disturbed from the time the unit leaves the barn until it is returned.



In Fig. 2 note guard on the cutter bar, always in place when the machine is moved, prevention personal injury and the tearing of brattice cloth. This permissible arcwall machine is being propelled to the next working place by a permissible battery truck which forms a part of the cutting unit.



Fig. 3 shows a gathering locomotive in the Coalwood "wireless" mine. As with all other electrical equipment in the mine, this locomotive bears the "permissible" plate of the U. S. Bureau of Mines. The quick-change battery compartment contains a 54-cell 39-plate lead battery having a capacity of 55 to 60-kw.-hr. The weight of the locomotive and its battery is approximately 9 tons.

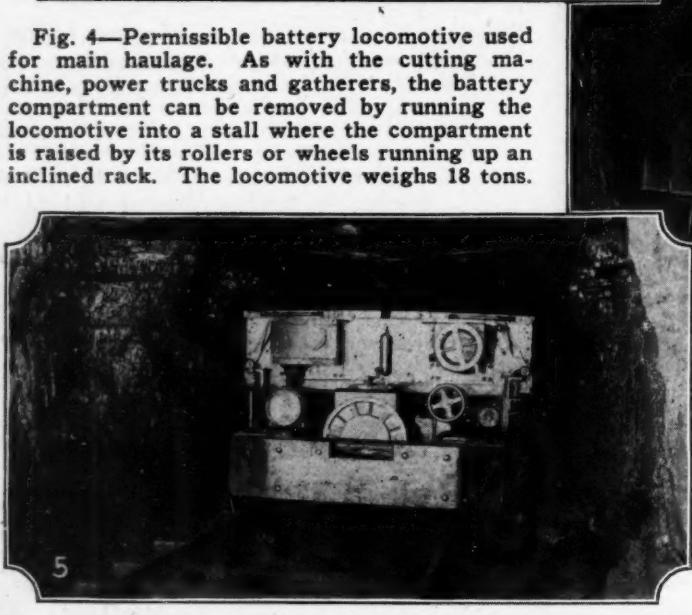


Fig. 4—Permissible battery locomotive used for main haulage. As with the cutting machine, power trucks and gatherers, the battery compartment can be removed by running the locomotive into a stall where the compartment is raised by its rollers or wheels running up an inclined rack. The locomotive weighs 18 tons.

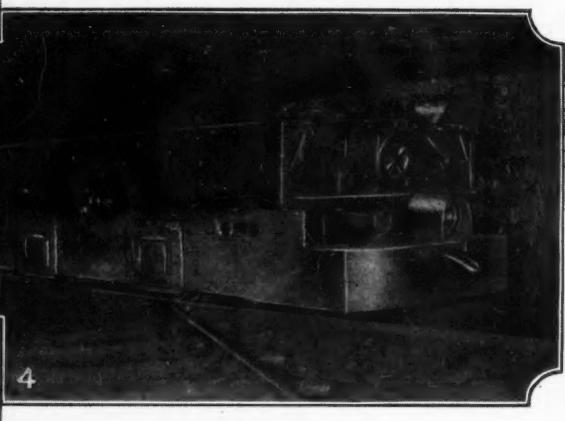


Fig. 5—Controller end of the main haulage locomotive. Low voltage is unknown in a "wireless" mine. A battery holds a fairly uniform voltage even at several times the normal discharge rate. The inherent characteristics of a battery to handle overloads and the extra weight that a battery puts on the drive wheels makes it necessary to limit carefully the number of cars pulled per trip. The fact that there is "almost no limit" makes abuse easier.

Bits Shaped to Standard and Duly Tempered Reduce Mining Costs

Machine - Die Sharpening Makes All Bits Alike—Oil Fuel Has Many Advantages for Preliminary — Two Men Usually Work Together

RECENT IMPROVEMENTS in the methods employed in making and sharpening mining-machine bits have greatly increased the speed of this operation and improved the quality of the bits themselves. Some five years ago a machine that forged this type of bit to the proper length and angle by means of a roller die, patterned after the well-known shaper, was perfected by the Sullivan Machinery Co. This machine has since been adopted in large numbers by the coal mines in many sections of the country.

The primary savings afforded by this machine or at least those most readily discernible and most easily evaluated are those effected in the blacksmith shop. Here the labor necessarily expended in making new bits or dressing old ones is greatly reduced. This has not only been because of the speed and accuracy of the machine but also on account of the better quality of the bits themselves, a smaller number being required to secure a given tonnage.

What might be termed secondary advantages accruing from this method of sharpening include the following: Every bit is perfect in shape and outline and within extremely small limits an exact duplicate of every other bit. It is estimated that the power consumed in the process of undercutting is reduced by an average of 20 per cent. The capacity of each machine is increased

have been developed. Two of these have been made in the machine itself and the third is an entirely separate piece of blacksmith-shop equipment.

On the left-hand side of the machine, a flatter or swaging die has been placed. When blanks for new bits have been cut from bar stock with their ends at a suitable angle and have been heated to a forging temperature they are placed in this die and their ends swaged down to a width of 1 in. after which they are rolled. By this means all fins or ridges on the edges of the bits are eliminated and only two or three strokes of the roller are necessary to make a new bit from a swaged blank.

SWAGE BIT BEFORE ROLLING

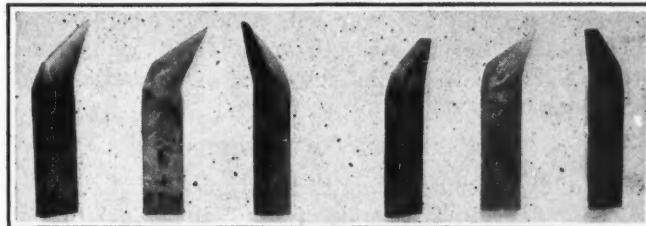
If a badly worn or broken bit is to be resharpened, it also is first swaged down, thus preventing the formation of fins during the rolling process. Furthermore this swaging reduces the time during which the bit is subjected to the rolling process, cutting down proportionately the wear and tear on the machine, roller and die.

It is customary and often necessary to temper sharpened bits without reheating. A new ejector and timing arrangement have been added to the sharpener which now render it possible to obtain any temper desired without reheating.

During the rolling process the point of the bit naturally becomes somewhat cooled and must be brought back to a proper temperature before being tempered if satisfactory results are to be attained. If the bits, after removal from the machine, are allowed to stand for a short period the heat from the heel naturally creeps to the point raising its temperature to the proper degree for plunging.

After ejection from the machine, therefore, the bits are deposited on a platform along which they are moved by the action of the gaging lever. It usually requires the time consumed in from five to eight sharpening operations for the point of a bit lying on the platform to become sufficiently heated for tempering. As the gaging lever is moved back and forth in the process of gaging and ejecting bits those on the platform are moved forward. The length of this platform and the number of bits that it will accommodate thus determines the point temperature and consequently the hardness obtained upon plunging. The bits are eventually pushed off the end of the platform into the quenching bath. If the platform is not long enough to accomplish the desired results it may be lengthened by means of a piece of tin or sheet steel attached to its delivery end.

The heating of the cutter bits to a proper forging



A Row of Sharpened Cutter Bits

Three shapes of cutter-bit points are in use, two of which are shown here. These are: The pick point, the chisel point, and the fish-tail point. They are used for cutting hard, medium and soft coals respectively. The best angles of cut, rake and clearance have all been determined with care, and all exert their influence on the power consumed by the undercutter.

and the stresses imposed upon it are lessened, with a consequent and proportionate reduction in upkeep cost. The number of bits used at any one mine is reduced, and no steel is lost by trimming as in some methods of sharpening.

Within the past year three distinct improvements

In the headpiece is shown the fuel-oil storage tanks at Valler, Ill. Fuel is purchased in tank-car lots and flows into these tanks by gravity. Thence it is forced to the shop storage by compressed air. One tank-car load is enough to last for several months. Many of the larger mines throughout the southern Illinois district have adopted oil as a fuel for heating their cutter bits preparatory to resharpening.



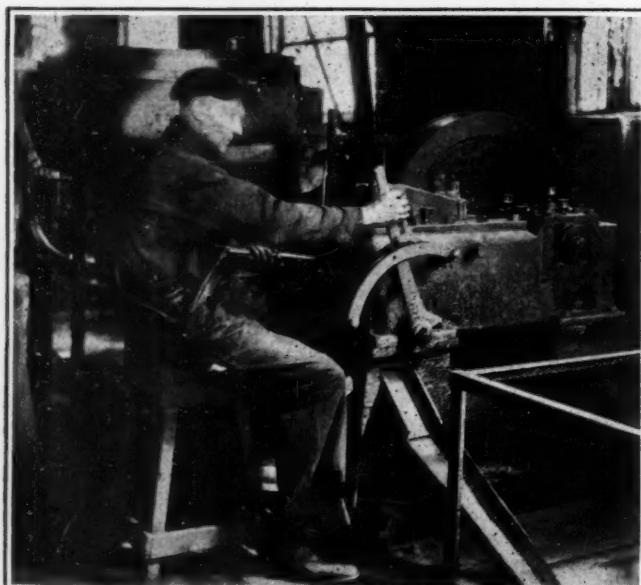
temperature has almost as important a bearing upon the results secured underground as the actual shaping of the bits. An inferior quality of steel, properly heated and tempered will give better and more satisfactory service than the best grade obtainable if improperly treated in this respect. The Automatic Bit Heater as manufactured by the Mines Equipment Co., of St. Louis, Mo., has been found to possess many advantages over usual means of heating bits when used in connection with sharpeners of the kind under consideration.

This furnace is equipped with a gravity feed and a lever by means of which the bits are fed to the heating chamber one at a time. Those already within this space are advanced through it by increments or steps each equal to the width of one bit. As they reach the hot end, they are automatically discharged to a chute that conveys them to a point within easy reach of the machine operator's tongs. The furnace hearth is so arranged that only the end of the bit to be sharpened is heated. The body or shank, therefore, upon completion of the tempering process is relatively soft and tough, which effects an appreciable saving in set screws and reduces the number of bits that are broken or lost.

FURNACES ARE OIL-FIRED

These furnaces are oil-fired, thus saving steel, for no injurious elements are imparted to the metal as is frequently the case if coal or coke is used. Furthermore, the steel is neither burned nor is it covered with scale as it would be if it came in direct contact with the burning fuel. The cost of the oil used per day is low. In most cases this item of expense is less than that of other fuels plus the cost of their handling.

Heating is rapid. In most cases from 7 to 10 min. only are required from a start with a cold furnace until sharpening can begin. As many as 600 bits can be heated per hour if this speed is necessary. The furnace is a complete, self-contained unit requiring no auxiliaries. It is unnecessary to operate any other shop equipment in order to run the furnace and sharpener.

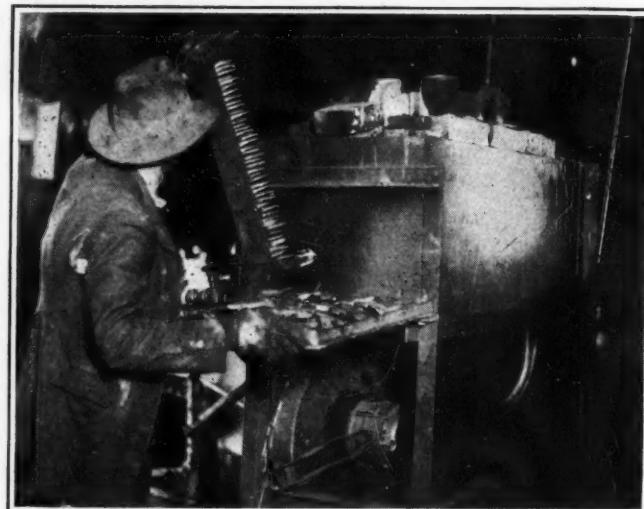


One Man Operates Both Furnace and Sharpener

In the shop of a mine in Southern Illinois. As a rule two men work as a crew, one tending the furnace and the other the sharpener. They change places periodically. If, however, the number of bits to be sharpened does not exceed about 2,000 to 2,400 per day, one man can do all this work without undue hurry. Where 4,000 to 5,000 bits must be sharpened daily a crew of two men may advisedly be employed. Approximately one sharp bit is required per ton of daily production.

It is customary for two men to form a crew for operating a furnace and sharpening machine, one feeding dull bits to the gravity chute, extracting those sharpened from the quenching bath and performing like duties while the other manipulates the sharpener, the two changing off from time to time. However, one man upon occasion can manipulate both machines simultaneously. In some cases this saves one man's labor and in others where only one blacksmith is normally employed in bit sharpening his capacity is much increased by the adoption of this regulated and accurate method of heating.

One-man operation is made possible by placing the



Filling Magazine of Furnace with Dull Bits

The bits feed downward by gravity. At each stroke of the feed lever the bottom bit is pushed into the furnace forcing a heated bit out at the opposite end. Only the point of the bit to be sharpened is raised to a forging temperature. As a result after the point has been rolled to shape and the bit is plunged in the tempering bath the point receives the desired temper, whereas the shank is left comparatively soft and tough. This results in appreciable savings both of bits and their binding set screws.

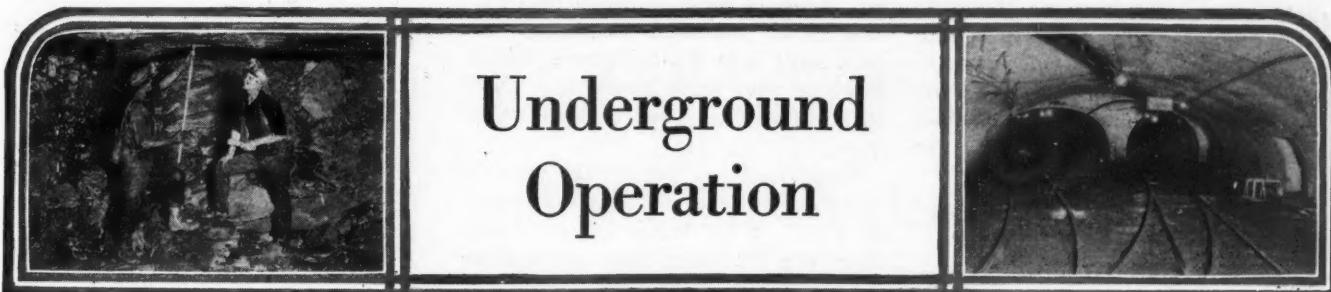
furnace operating lever under control of the sharpener operator's foot. He can thus manipulate both devices without changing his position. With this equipment one man can sharpen 1,800 to 2,400 bits per 9-hr. day and two men working together will handle from 4,000 to 5,000 bits in the same length of time. In either case all bits will be uniform in shape and of the same angle and length of point.

VALIER COAL CO.'S METHODS

One of the accompanying illustrations shows a heater and sharpener in the shops of the Valier Coal Co., at Valier, Ill. There are two installations in this shop, that is two heaters and two sharpening machines. By this means nearly \$2,750 are saved per year over the methods formerly employed.

Hammers are used for straightening bent bits and doing miscellaneous forging—of which work there is always plenty in the shop serving any extensive mining operation.

As to performance and operation, a certain mine in West Virginia reports that, although speed is not advocated if it must be attained at the expense of good work, yet 19,445 bits have been resharpened in 32 hr. of working time. In this process 83 gal. of oil costing 10c. per gallon were consumed. These figures were obtained from a meter that counts the number of bits taken from the heater and from the records of the pump attached to the oil tank.



Underground Operation

Eliminates Individual Car Shifting In Room-and-Pillar Mining

Car Trip and Conveyor Placed Side by Side—Tripper on Conveyor Arranged to Deliver Coal to Cross Belt Which in Turn Delivers It to Cars

Recognizing the need of providing a more continuous car supply for mechanical and concentrated hand loading, in room-and-pillar work, Frederick L. Schoew of Huntington,

sufficient number of trucks are coupled together to form a conveyor equal in length to the mine car trip to be loaded. The tripper, that part of the device for delivering the coal from the main belt to the cars, runs on a track which is mounted on top of the main-belt trucks. The couplings between trucks are adjustable as to distance, thereby providing a means of tightening the belt, or of slackening sufficiently to allow moving the entire conveyor as a unit from one room to the other.

Control of the couplings is by hydraulic pressure, which arrangement makes it possible to slacken the conveyor belt in a few seconds ready for moving around curves. Before moving, however, the tripper or discharge carriage must be spotted near the center of a main-belt truck. The sectional sketch, Fig. 2, shows the general idea of the tripper.

Mr. Schoew contemplates that the conveyor can be made to work in a bed as thin as $3\frac{1}{2}$ to 4 ft. By its use, the small mine cars which have proved such a drawback to mechanical loading, can be used. Fig. 3 indicates how the conveyor can be employed for concentrated production without significant change to the present common mining system.

Rooms can be made quite long and arranged to extend from entry to entry without a break leaving pillars, however, to protect the entries. It can be so arranged that the conveyor can assist in the drawing of the pillars at one end of the room.

cates how the conveyor can be employed for concentrated production without significant change to the present common mining system.

The rooms can be driven to a depth of 1,000 ft. or more instead of 300 ft. as is now the practice. The territory can be worked in blocks and the rooms continued through the panel entries, for instance, through Second Right in Fig. 3. After room No. 2 has crossed Second Right, it will be used for drawing the pillar between rooms No. 1 and No. 2, and so on.

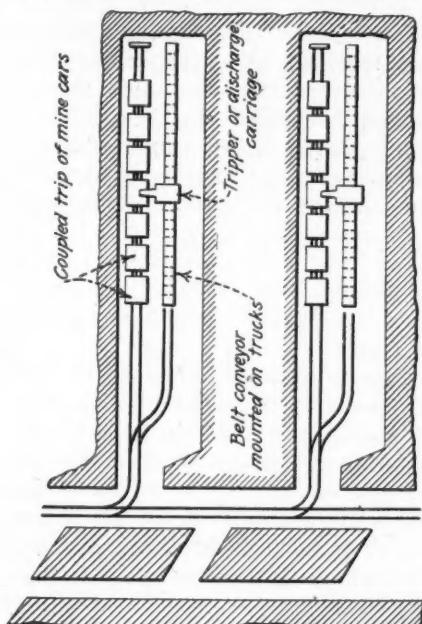


Fig. 1—Loads a Coupled Car Trip

Belt of length equal to car trip is set alongside track. A tripper can be spotted at any point along the belt and with the aid of a cross belt will transfer the coal to the mine car.

W. Va., president of the New Howard Coal Co., has worked out a plan which he believes is applicable to the average mine. Mr. Schoew was a mining engineer before he became an operator, and for thirty years managed a mine.

His device is covered by letters patent issued to Mr. Schoew, May 26 of this year. Fig. 1 illustrates the plan. The device is a track-mounted belt conveyor with power-moved tripper for loading a train without the necessity of uncoupling or of individually spotting the cars.

The belt conveyor is carried on a train of trucks each 12 ft. long. A

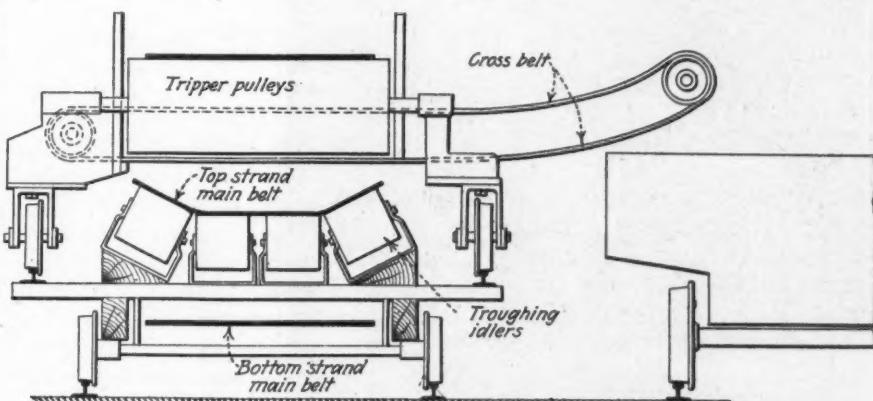


Fig. 2—How Coal Is Tripped and Transferred

The upper belt is bent over the tripper pulley, back and down over another so as to arrive at the level of the tops of the troughing idlers. As soon as the coal reaches the tripping pulley it falls on the cross belt. The system is that used in delivering coal to boilers and ore to bins or to open storage piles.

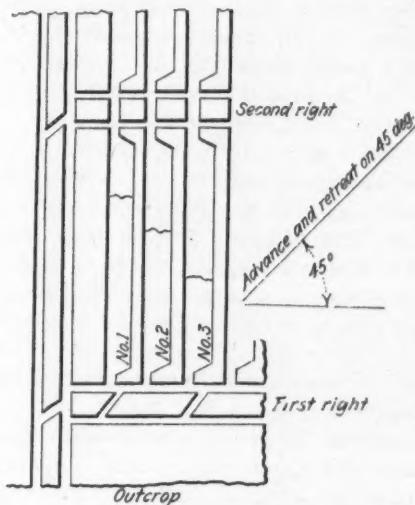


Fig. 3—Method of Mining

One conveyor can serve three to four rooms assuming that three cuts are loaded per shift. One locomotive capable of pulling 10- to 12-car trips can gather from 10 rooms thus handling approximately 750 tons per shift.

Extensive Lighting Finds Increased Favor

Despite the insistent demand of the last few years for greater economies of operation there appears to be a trend, especially at bituminous mines, toward the installation of extensive lighting systems.

The cost of lighting haulways is small—something under 1c. per ton, but companies are not spending even this sum without feeling that the cost or more is being saved in some other way as a result of the lighting. No doubt more mine lighting would be done were it not for the fact that the savings are indirect and hard to analyze.

Safety is one of the prime considerations, but with better lighting comes an urge and tendency toward better and cleaner track. This condition in turn reduces delays to haulage and decreases equipment maintenance cost. Track upkeep is also handled at a lower cost considering the results obtained. Men do the work quicker in the better-lighted places.

The accompanying illustration is from a recent photograph on the main haulway in Henry Clay No. 1 mine of the Edgewater Coal Co., Lookout, Ky. C. H. Scott, superintendent of the mine, is rightfully proud of the way in which this haulway is maintained.

For a distance of 4,000 ft. from the drift mouth, electric lights are located every 60 ft. A 50-watt 275-

volt lamp is used without reflector. The other material necessary for each light is a weatherproof socket, three or four split knobs and about 15 ft. of rubber-covered single-braid wire.

Each light is connected directly from rail to trolley without a switch or fuse. With some of the lights there is a deviation from the regular spacing of 60 ft. in order that there may be a lamp in front of each manhole. The general illumination on the haulway is sufficient to reveal a car or man on the track several hundred feet ahead of the locomotive.

Make Prop Wedges in Shop Using Band Saw

After an extensive study of its accident records, the Clinchfield Coal Co., of Dante, Va., decided its most

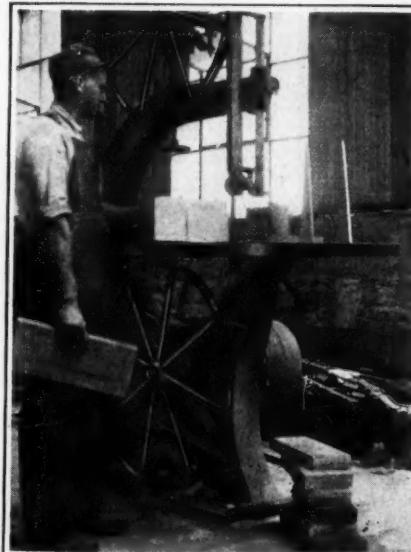


Fig. 1—Better Cap Boards Can Be Made in the Shop

With band saw a man can manufacture 4,000 suitable cap boards in a single shift, and they will be better adapted to his work and less wasteful of timber than those he would make with an axe.



Well Lighted Haulway

This is one of several mines in the Big Sandy valley of Eastern Kentucky at which lighting is found profitable. The units consist of 50-watt 275-volt lamps connected directly between the rail and trolley without switch or fuse. The regular spacing is 60 ft. but with certain deviation to bring a lamp in front of each manhole.

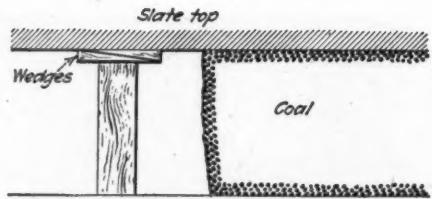


Fig. 2—How the Boards Are Used

The wedges are driven from two directions. Thus driven, they make the post tight, and this is done in much less time than if the miner hunted material and hacked it into a semblance of the right shape with an axe, which is probably none too sharp for the service demanded.

common accidents were from falls of slate. The management of the mines found that the principal reason why miners did not protect themselves against this important hazard, by setting timbers and props, was that suitable cap boards were not provided and that the miners did not have the proper tools for making them.

FOUR THOUSAND IN A SHIFT

A band saw, as shown in Fig. 1, was provided, and with its existence one man manufactures 4,000 wedge-shaped hardwood cap boards in a single shift. These cap boards are made by sawing diagonally across a piece of wood measuring 2x6x14 in. This makes two wedges that can be placed over a prop as shown in Fig. 2. When both wedges are driven tight, the post is firmly held between roof and floor.

Fig. 3 shows a mine-car load of wedges ready to be taken to a section of the mine where they will be distributed at convenient places for the miners. At one of the mines of this company, a miner cut off his thumb trying to make a suitable cap board. The compensation in this one case was more than the cost of all equipment, material and labor needed to make 200,000 cap boards. When the miner spends no time looking for suitable material and making cap boards but instead loads coal, the daily tonnage is increased and the timebr is set in a safer and more workmanlike manner.

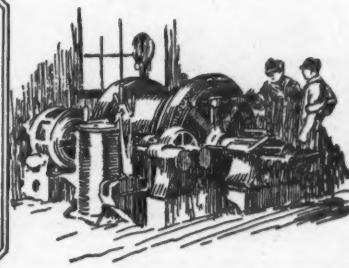


Fig. 3—Wagonload of Life Savers

As soon as made, the prop wedges are loaded into a car and taken into the mine for the loaders to use. With such convenient material the miner does not delay the erection of posts, despite his anxiety to load coal.



Practical Pointers For Electrical And Mechanical Men



Armature Winding Speeded By Using Machine

Most direct-current motors are now equipped with form-wound coils, but quite a number of small mine pump motors are in use with armatures that have closed slots and which must be "wire-wound."

This latter type is not popular with the average armature winder. Generally speaking, more skill and practice is required and more physical labor is involved than in winding a form-wound armature. One of the important factors is to maintain a tension on the wires in order to get the winding as tight as practical. It is difficult to provide this tension when the winding is applied by hand.

COIL WINDER IS UTILIZED

In the Coaldale shop of the Edgewater Coal Co., Hellier, Ky., the coil-winding machine is utilized for winding the "wire-wound" armatures of small pump motors. The illustration shows a 5-hp. 250-volt armature mounted in the machine ready for action. The yoke or bar A which holds the armature is the only addition to the machine.

In this case three conductors are being applied at once and these are paid out through a tension device

which insures a tight job. The winding is completed in a much shorter time than by the hand method and with less physical effort.

Small Coal Plant Has Model Pipe-Covering Job

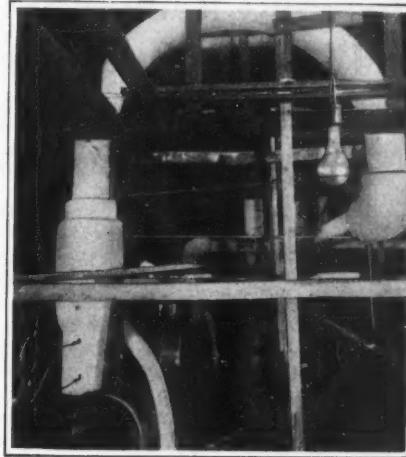
An item often neglected, but one which is important from the standpoint of power-plant operating cost, is that of steam-pipe covering. Money invested in this way will usually earn from 50 to 300 per cent per year.

Uncovered steam piping in a power plant acts exactly as a radiator in a house. It has been shown by experiment that 100 ft. of 8-in. pipe will radiate approximately as much heat in 24 hr. as would be realized from the combustion of 520 lb. of coal. Thus, roughly, 1 ton of coal would be required to merely keep such a pipe hot. This amount of heat, in turn, is thrown into the atmosphere and if confined within a plant will render it uncomfortably warm for the operatives.

GOOD COVERINGS PAY WELL

As an example, the following case is selected from a table made by the mechanical and electrical engineer of a large operating company to show the need of pipe covering in the company plants. The assumptions were these: Boiler pressure 100 lb., outside temperature 70 deg. F., 8-in. pipe, coal cost \$3 per ton delivered in the boiler room, cost of good grade covering material for 8-in. pipe \$1.21 per foot. The fuel saving in this instance will pay for the covering material in 137 days.

The total cost of covering varies over a wide range depending upon the quality of insulating material and the method of application. In order to obtain an efficient, durable, and sightly job it is generally necessary to engage specialists for the work. The power-plant engineer or general mechanic ordinarily is not experienced in this type of construction. He will not provide himself with



Construction View of Covering

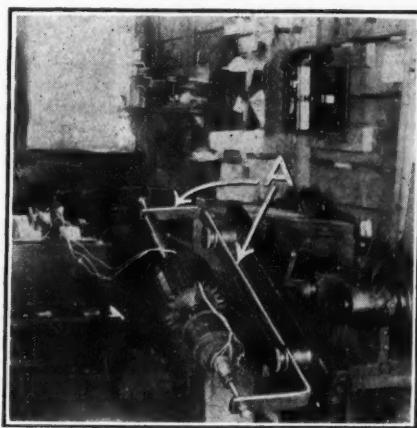
In small plants it is not uncommon to see a pipe-covering job in which bends and fittings are left bare. Here, every bit of radiating surface is neatly insulated and covered with sewed canvas.

the right materials and tools necessary for doing a first-class job. Recently a *Coal Age* editor while visiting the Coaldale mine of the Edgewater Coal Co., in eastern Kentucky saw in the small direct-current power plant a remarkably neat job of pipe covering nearing completion. A portion of this work, partially obscured by scaffolding, is shown in the accompanying illustration.

SPECIALISTS EMPLOYED

Inquiry as to where in that community the superintendent had found men capable of such a neat job of pipe covering, revealed that these workmen were specialists who had previously been doing such work at the byproduct plants of the parent Solvay company.

Each fitting is perfectly covered to a regular thickness with magnesia cement. The insulation over both pipes and fittings is finished with a covering of 10-oz. white canvas with sewed seams. The entire job is such that it should prove an inspiration to the plant engineers to maintain the balance of the equipment in ship-shape fashion. Makeshifts and slatternly jobs wherever performed tend to create an atmosphere favorable to other work of that character.



Armature Mounted Ready to Wind

The yoke A, made by the local blacksmith, has threaded screws the points of which hold the armature by fitting into the shaft centers. The wires are guided by hand into the slots as the armature is rotated end for end.



Hearings Reopen in Lake Rate Cases; Illinois Witnesses in Center of Stage Against Action Adverse to Interests

By Sydney A. Hale

Atlantic City, N. J., July 20.—Illinois as an opponent to any change in the rates from the Eastern producing fields to the lakes which might work to the advantage of the Appalachian region in competition with Illinois for the coal business of the Northwest stepped to the front this morning when the Interstate Commerce Commission reopened the hearings in the lake cargo cases of 1925 at the Marlborough-Blenheim Hotel. The proceedings before Commissioner Hall and Examiner Gerry were further enlivened when counsel for the Pittsburgh and No. 8 producers, the original complainants in the cases, sought to amend their complaints by eliminating any attack on the reasonableness of the transshipment rates from the Pittsburgh district to Sandusky and from the No. 8 and Cambridge fields to Sandusky and Toledo.

Attorneys for the railroads and the Southern operators objected vigorously to the proposed change.

On behalf of the Illinois Commerce Commission, Rate Expert Slater declared that the Illinois state authorities were opposed to any reductions in the rates to the docks. The Illinois Utility Board further took the position that it was improper for the Interstate Commerce Commission to establish proportional rates upon any traffic over which it did not have complete jurisdiction. By juggling vessel rates, it was contended, Illinois interests could be "crucified." No reduction should be made in rail rates unless the benefits thereof were extended to Illinois mines. It was suggested that examination of the entire rate structure might properly be held under the Hoch-Smith resolution.

Union Counsel Joins Attack

A. W. Kerr, general counsel for District No. 12 of the United Mine Workers, also intervened in an attack upon reductions in rates which would adversely affect Illinois. The Commission, he argued, should not disrupt old-established relationships. Its tinkering with rates in 1915, he charged, cost Illinois 9,000,000 tons of business and had cut the number of workers from 106,000 to 77,000. He protested against changes which had the effect of increasing the disadvantages of the union fields in competition with non-union fields.

Counsel for the complainants opposed

any intervention which would defer decision in the case. Spokesmen for Illinois insisted their intervention did not broaden the issues. Illinois, they pointed out, was recognized as a party at interest in the original decision handed down last summer. Commissioner Hall ruled that the petition would be accepted subject to the usual proviso that the action did not unduly broaden the issues.

Decry "Monkeying with Mileages"

In the opinion of opposing counsel, the amendments to the original complaints offered by A. G. Gutheim and E. S. Ballard were made in "an attempt to monkey with mileages" by eliminating long-haul traffic from the computations of distances from the Northern fields to the lakes.

Attorneys for complainants retorted so little traffic moved from their mines to Sandusky and Toledo that they did not care what happened to those particular rates and did not want them considered in making the picture of transportation to the lakes from Northern fields. They did not, however, seek to eliminate these ports from consideration in stressing the alleged preference to the Southern fields.

During the course of a canvass to determine whether there had been any change in the position of any of the parties to the original proceedings, Mr. Slater wanted to know whether there was any railroad, other than the Wheeling & Lake Erie, which was not defending the existing rates.

"There ain't any sich animule," interposed James Stillman, counsel for the Pennsylvania R.R.

W. A. Northcutt, for the Louisville & Nashville, demanded that it be made clear that no railroad had any intention of advancing any rates. He intimated that an order of the Commission fixing rates from the Southern fields to the lakes on a higher basis, with a widened differential, would be fought to the last ditch.

After making a preliminary check, Commissioner Hall expressed the opinion that all additional testimony to be offered by the complainants and intervenors supporting their position would be concluded this week. The railroads and opposing intervenors will be heard at some later date, probably in September.

Claire J. Goodyear, former commissioner for the disbanded Pittsburgh Coal Producers' Association, took the stand this afternoon as the first witness for the complainants, to show what had happened to the lake trade and to the competing districts since the record in the original case was closed and "to fill in certain gaps" in the original presentation.

The question of the relationship between rates on lake cargo coal from the Northern and the Southern fields has been before the Interstate Commerce Commission in one form or another since 1912. In the earlier decisions in the controversy the Commission was inclined to look with sympathy upon the contention of the western Pennsylvania and Ohio districts that the existing adjustment unduly preferred producers in southern West Virginia and endeavored to give some relief to the Northern operators. In the cases involved in the present hearings, however, the Commission ignored the recommendations of its examiners who heard the testimony and declined to disturb the rate structure.

Attempt to Boost Fails

As far back as 1910 the Southern lines and the Baltimore & Ohio, spurred to action by the complaints of the Pittsburgh and No. 8 districts, sought to advance Fairmont rates 3½c. per ton; Kanawha and Kenova-Thacker, 9½, and Pocahontas-New River rates, 9¾c. This attempt ended in failure because only the Norfolk & Western made any effort to justify the increases. Simultaneously with the announcement of the decision of the Commission that these other carriers had not made out a case, the Commission, in *Boileau v. P. & L. E. R.R.*, 22, I. C. C. 640, cut the rate from the Pittsburgh district to Ashland Harbor from 88 to 78c. per ton. An application for a modification of that order fixing differentials was denied.

In 1916 the rates were again in issue, but the Commission refused to take action because of the abnormal conditions created by the World War. In the case decided last summer, *Lake Cargo Rates*, 1925, 101 I. C. 513, the Northern fields again demanded relief. Operators in the Pittsburgh, Panhandle, Cambridge and No. 8 districts alleged that their rates were unjust and unreasonable and that they were discriminated against in favor of the Southern fields. Southern Ohio intervened in support of that plea, but insisted that its rates should continue on a parity with the charges in effect from the No. 8 and Cambridge fields. Fairmont, in a separate complaint heard in connection with the main case, alleged that rates

from northern West Virginia were unduly high when compared with those in effect from the Pittsburgh and Ohio districts.

The tentative opinion of the Commission supported this view and suggested a drastic revision, which would have upset many relationships of long standing. This readjustment is summarized in the table following:

Lake Cargo Rates

(In cents per net ton)

District	Present Rate	Proposed Rate
Butler-Mercer	134	115
Deerfield	148	115
Massillon	148@153	115
Middle Ohio	148@163	130
Jackson Center	151	130
Freeport	151	142
Reynoldsburg	151@156	142
Oldham	153@158	142
No. 8 and Cambridge	163	142
Crooksville, Hocking and Shawnee	163	150
Pomeroy and Jackson County	163	167
Pittsburgh	166	145
Saltsburg and Derry	171	150
Connellsburg	172	167
Ligonier and Blairsville	176	150
New Florence and Indiana County	181	159
Fairmont	181	175
Altoona	188	167
Myersdale	188	185
Ironton-Kentucky	191	175
Ohio River, W. Va., Belington and Kenova	191	185
Thacker, Big Sandy and Kanawha	191	198
So. Jellico and Hazard	191	209
Harlan and McRoberts	191	218
Gauley	193	198
Cumberland-Piedmont	193@288	198
Vintondale	198	159
Spangler and Bellwood	198	175
Cherry Tree	203	185
New River, Tug River and Pocahontas	206	209
Clinch Valley No. 1	206	218
Clinch Valley No. 2, Oakdale, Tenn., and Stonega	206	228
Clearfield	238	185
Radford, Va.	241	228

The proposed adjustment proved as unsatisfactory to the complainants, who had asked base rates of \$1.23 from the No. 8-Cambridge fields, \$1.26 from Pittsburgh, \$1.60 from Fairmont, \$1.91 from the southern West Virginia high-volatile and related fields and \$2.06 from the low-volatile districts, as it was to the Southern producers and to the railroads. It was attacked on all sides. The Commission's decision, handed down last summer, dismissed the complaints.

That disposition of the case provoked a storm of protest from the Northern operators and their political allies. The decision was denounced in Congress by Senators Reed of Pennsylvania and Willis of Ohio and defended by Southern Senators and Congressmen. The United Mine Workers and the American Federation of Labor also entered the arena, intimating that the purpose of the Commission's action was to favor the non-union producing fields. The State of Pennsylvania and the State of Ohio joined in petitions for a rehearing. The Northern carriers, which, with the exception of the Wheeling & Lake Erie, had made common cause with the Southern roads in fighting the complaints, split with their late allies.

The Interstate Commerce Commission, after considering the various applications for rehearing and the cross petitions of the Southern operators and carriers opposing such action, announced that the cases would be reopened.

Copeland Assails Latest Coal Policy Of President Coolidge as Reversal Of Position Taken in 1925 Message

Wroth at the reported intention of President Coolidge to apply the principles of the recently enacted Watson-Parker railway labor law to the coal industry, Senator Copeland (Democrat, New York) issued a statement on July 18 in which he asserted that this would be a complete about-face on the part of the President. The New York Senator quoted a newspaper dispatch announcing that the President was going to make overtures to coal operators and miners looking to a truce in the coal industry similar to that brought about between railroad operators and the brotherhoods under the provisions of the railway labor dispute law.

"Was the President naïve?" asked Senator Copeland, "or did he have his tongue in his cheek when he proposed the application to the coal industry of the Watson-Parker idea of settling railroad disputes?

"If he ever read the Senate committee coal bill, commonly called the Copeland bill, he would know that that is exactly what the measure proposed. Indeed, the formal report of the committee said 'it took a leaf from the Railroad Labor bill as it passed the House and, so far as such a law can do so, makes it the duty of all employers and employees engaged in the coal industry to exert every reasonable effort to make and maintain agreements concerning wages and working conditions and to settle their own disputes. All members of the committee agree that so far as possible government should refrain from interference in the industry.'

Industry Wants "Hands Off"

"The fact is, of course, that the coal industry wants to be left alone. It resents any 'interference' and is particularly agitated over the fact-finding feature of the Copeland bill. It does not want the public to have any facts, but wishes it to be controlled by the fictions and half-truths the industry feeds out to the public."

"For the President to encourage this attitude is to defeat every formal recommendation he has made to the Congress. It gives an air of insincerity to the excuse made last winter that 'the President has no power to deal with the coal problem.' Does not he want the Congress to give him that power?"

"Some may consider his present conciliatory attitude to be an evidence of high statesmanship. To me it seems merely another sign of reversal of intention on the part of the Administration. How different is this position from the brave language contained in the President's message to Congress in December, 1925, when he said:

"Authority should be lodged with the President and the departments of Commerce and Labor giving them power to deal with an emergency. They should be able to appoint temporary boards with authority to call for witnesses and documents, conciliate dif-

ferences, encourage arbitration and, in case of threatened scarcity, exercise control over distribution.

"Making the facts public under these circumstances through a statement from an authoritative source would be of great public benefit. The report of the last Coal Commission should be brought forward, reconsidered and acted upon."

"Is it possible that the President has been weaned away from his course simply because the great coal barons, large contributors to the Republican campaign fund, have exercised their invisible power over the administration?

"There must be found a way to make impossible the repetition of the situation of last winter. Soft words and ready yielding on the part of the administration will not help to find that way."

"I want to ask the President: Is he going to permit the dictation of a selfish group to deter him from taking the steps which are absolutely essential to guard the citizens of the United States against the deprivation of coal?"

Another Rate War Brewing?

Another coal rate war is threatened. This time it is the adjustment to the Southeast which holds out the promise of becoming as much of a *cause célèbre* as the rate adjustments to the Northeast, the Northwest and to the lakes. Tariffs have been filed by the Southern, Norfolk & Western, Interstate, Norton & Western and the Carolina, Clinchfield & Ohio, reducing rates from southwestern Virginia to the Southeast from 1c. to 17c. per net ton to put them on a parity with rates from Harlan County, Kentucky.

The Louisville & Nashville R.R. has asked the Interstate Commerce Commission to suspend the lower rates, which are scheduled to go into effect on July 22. The Southern Appalachian Coal Operators' Association and the Harlan County Coal Operators' Association also are fighting the reduction, claiming that the reasonableness of the rates in issue already are before the Commission in *Virginia Coal Operators' Association vs. Aberdeen & Rockfish R.R.*, not yet decided. The L. & N. further charges that dealers are withholding orders from Harlan County and are placing them with Virginia, subject to the reduction in rates being made.

The protesting railroad insists that the tariffs seek to give the Virginia operators the relief denied them in the tentative opinion in the formal proceeding referred to. Although the tariffs under attack apply only to Georgia points, the L. & N. asserts it believes it is the intent of the Southern and its associates to extend the reductions to Tennessee, Alabama and Florida "to the extent that their connecting lines can be induced to participate therein."

Ohio Operators Launch State-Wide Organization To Revive Coal Industry

Seventy-five Ohio coal operators representing 80 per cent of the mine capacity of the state, at a meeting in Columbus July 14 launched a state-wide association having for its object the reopening of mines in the eastern, southern, central and Cambridge districts. It will be the first association of its kind in Ohio. Heretofore operators have acted by districts.

The producers, who represented every district in the state, were in session two days at the Neil House, before plans were perfected and incorporation papers filed with the Secretary of State. The new organization is the Ohio Coal Operators' Association, Inc. The charter provides for 500 shares of stock, with no par value designated. The charter was filed under the provision of Ohio laws as a corporation for profit, placing it in the same category as any commercial organization. Shares, at \$50 each, were all subscribed for by operators present.

The purposes and policies of the association are contained in the following resolution adopted by the operators: "Believing that the welfare of the coal industry in the State of Ohio requires that the industry within the state be handled as a unit, we recommend the formation of an organization of coal operators of the State of Ohio, which will be representative of the industry therein, and that such organization be charged with the duty of developing a broad policy respecting the employment of labor in the mines within the state, giving due consideration to the rights of both employer and the men employed, to the end that the industry be placed upon a basis which, while fair to the miner, will yet permit of the early and general resumption of successful operation of these mines in the competition which they encounter in marketing the coal."

United Front Due to Slump

The organization is the result of much effort on the part of a number of leading operators of Ohio and for the first time all fields are united into one association. It required several years of loss of business and suspension of operations to bring them together. Attempts to accomplish that purpose in previous years have failed because of diverse opinions among the operators in the various fields. Now all of the smaller differences have been submerged and there is practically unanimity of views in all fields. The attitude of the association toward labor and the reopening of Ohio mines will be determined at another meeting to be held in Columbus Aug. 10. It is announced, however, that no effort will be made to force the open shop in Ohio.

Lee Hall, president of the Ohio division of the United Mine Workers, in an interview commended the organization, saying that both the operators and miners should be represented by strong organizations.

Those signing the articles of incor-



Pinnacle Rock, Monument of Gigantic Upheaval

The trip of the West Virginia Coal Mining Institute, July 14, to see the "Coloder" and dry-cleaning plant at McComas took the party past this interesting formation. The rock is a fragment of a stratum of firmly-cemented sandstone. This stratum, at the location of the Pinnacle Rock, was standing on edge. The monolith marks the edge of a fault on one side of which the coal has disappeared.

poration were John S. Jones and E. M. Poston, of Columbus; George M. Jones, Toledo; S. H. Robbins, T. K. Maher, W. L. Robinson, W. H. Haskins, W. F. Kutz and L. H. Bray, of Cleveland, and J. C. Kyte, of New Philadelphia.

Officers elected were S. H. Robbins, Cleveland, president; George M. Jones, Toledo, vice-president; A. A. Augustus, Cleveland, vice-president, and John S. Jones, Columbus, secretary and treasurer. The executive committee is composed of the officers and R. L. Wildermuth, Columbus; T. K. Maher, Cleveland, and W. H. Haskins, Cleveland. The board of directors is composed of S. H. Robbins, W. R. Woodford, T. K. Maher, R. L. Wildermuth and Ezra Van Horn, representing the eastern Ohio field; T. R. Biddle, Athens; John S. Jones, George M. Jones and E. M. Poston, representing the southern Ohio field; W. H. Haskins and H. L. Robinson, the middle field, and A. A. Augustus and W. F. Kutz, the Cambridge field.

A committee appointed by President Robbins worked all night July 13 to draft a constitution and by-laws, which was submitted to the meeting July 14. Before the incorporation papers were filed they were passed on by attorneys.

Operators who did not attend or were not represented at the preliminary meeting are to be invited to attend the meeting to be held in Columbus on Aug. 10.

Dalrymple Voted Out

William Dalrymple, for sixteen months president of district No. 21, United Mine Workers, with headquarters at Muskogee, Okla., has been removed from office by a majority vote of the district executive board. He was charged with negligence in complying with laws of the union.

Charles A. Coffin, Founder Of General Electric, Dies

Charles A. Coffin, founder and for thirty years head of the General Electric Co. as president and chairman of the board of directors, died July 14, at his home in Locust Valley, Long Island.

Charles Albert Coffin was born in 1844, in Somerset County, Maine, and was graduated from Bloomfield (Me.) Academy. He went to Boston as a young man and, with Micajah P. Clough, formed the firm of Coffin & Clough, and established a shoe factory at Lynn, Mass.

In 1883 Silas A. Barton, a Lynn printer and stationer, interested him in the formation of a syndicate for the purchase of the American Electric Co., of New Britain, Conn., a small and struggling concern, the head of which was Prof. Elihu Thomson. Associated with him was Edwin Wilbur Rice, Jr. The Lynn Syndicate, as it was known, purchased control of this little company, whose annual net profits at that time were less than \$20,000, and moved it to Lynn in the latter part of 1883. The name was changed to the Thomson-Houston Electric Co. in honor of Professor Thomson and his early associate, Prof. Edwin J. Houston.

Mr. Coffin knew little about electrical matters, but he interested himself keenly in the work of Professor Thomson and Mr. Rice. As the affairs of the company developed he took a dominant part and became its vice-president and treasurer.

Absorbed Brush Electric Co.

It was through his leadership that the company developed the central-station idea as applied to arc lighting, and in 1888 he induced the company to enter the electric-railway field. A number of other electrical concerns were absorbed, most notable among them being the Brush Electric Co., of Cleveland.

In 1892 occurred the consolidation of the Thomson-Houston Co. and the Edison General Electric Co. of New York, in which all the activities and interests of Thomas A. Edison's incandescent-lamp development had previously been merged. Mr. Coffin and the Thomson-Houston company were dominant in this amalgamation.

When the consolidation was consummated, in April, 1892, under the name of General Electric Co., Mr. Coffin was elected president. For the succeeding 21 years he was at the helm of the new concern, which became the leading electrical company in the United States.

Soon after 1900 he supported the work of his company's engineers in developing the Curtis steam turbine, which revolutionized the primary power sources in electric light and power stations. He indorsed the movement to establish, in 1901, a laboratory for electro-chemical research which grew to be the research laboratory of today, noted for its contributions to fine science and electrical development.

Mr. Coffin retired from the presidency of the company in 1913, but became chairman of the board of directors and remained in active participation in the company's affairs until 1922.

Mounting Coal Exports to Britain To End Soon Is Washington View; Strikers Unable to Hold Out Long

By Paul Wooton

Washington Correspondent of *Coal Age*

While more than a million tons of American coal have been exported as a direct result of the British strike, observers in Washington express the opinion that this business will be short-lived and unlikely to expand beyond its present volume.

Stocks on the Continent are large and the early ending of the strike is predicted. American miners with their higher wages and better chances for obtaining subsidiary employment have demonstrated their ability repeatedly to stay out longer than two months, but to the British miner such a period of idleness is a very long time indeed. With everything apparently going against them the men are thought to be reaching the point where they must make peace.

The government evidently is convinced that the principal contentions of the owners are sound and is giving more and more support to that side of the controversy. Despite all the influence the labor leaders in various other countries could bring to bear—John L. Lewis is over there and is supposed to have been helping—the eight-hour bill was passed. This was an unqualified victory for the owners.

Victory for Owners Near

Provision for voluntary amalgamation goes little further than the present situation and does not represent any concession by the owners. The British operators apparently are on the threshhold of victory, which means that they will be in a better position to compete in world markets than at any time in recent years. Any customers in South America that have been added to the American list during the strike hardly will be annexed permanently and a fight to retain old customers in the Latin-American market is in prospect.

The Department of Commerce is watching closely the effects of the strike. Its recent review of the export situation shows that the bulk of coal purchased has been high volatile from the Fairmont, Kanawha and Logan districts of West Virginia. It has gone principally to the United Kingdom for public-utility, railroad

EDITOR'S NOTE—The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men in the legislative and executive departments. There is no necessary connection between their views and COAL AGE editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.

and gas-works use. The purchasers, however, were British producers, whose orders were placed to apply on the contracts of the essential services.

Low volatile has been slower to feel the effect of the strike, but since the latter part of June the demand has increased sharply both for bunkering and for consignment to bunker stations abroad. Extra shipping has been required to handle the coal exports. The fact that all the tramp steamers are carrying coal has made it necessary for the Shipping Board to furnish fifty-six additional vessels to carry the grain that usually moves in those vessels.

The mines in the Ruhr, in Belgium and elsewhere in Europe are increasing their production, thereby adding to the large stocks at the mines on the Continent. In the Ruhr, stocks on hand at the end of June totaled 8,000,000 tons. This was in addition to 3,500,000 tons of coke. Belgian stocks were nearly 1,000,000 tons at the end of June. These reports of stocks at the mines always attract attention in this country, where practically all mines produce only as they are furnished cars for shipment. But in Continental Europe stocks at the pithead frequently are equivalent to more than a month's output.

It is apparent that after two months of strike the British miners have created no world shortage of coal. The effect on prices has been small. European stocks, instead of being depleted, are above normal.

Erie Coal Segregation May Await Merger

Segregation of the Erie R.R. coal properties is not provided for in the modified plan of the Van Sweringens for consolidation of the five railroads involved in their original Nickel Plate proposal, it was learned late last week. When the Interstate Commerce Commission rejected the first plan, the divorcement of the coal companies was considered, but an examination of the mortgages convinced the Erie management that it would involve long litigation.

The proposal presented by the Van Sweringens to the Erie directors concerning the coal properties was to the effect that segregation of the properties might be more rapidly effected by the new company after consolidation than by the Erie.

The Van Sweringen brothers were expected in New York this week and many railroad men believe an agreement will be reached soon which will open the way for further negotiations with the Chesapeake & Ohio and Erie railroads.

Tell How to Fire Furnace With Minimum of Smoke

Instructions on how to fire furnaces and boilers with a minimum of smoke have been issued in pamphlet form by the Citizens' Smoke Abatement League of St. Louis, Mo. According to the brochure, the estimated loss to citizens and business firms by smoke annually was \$15,000,000. The compilers of the booklet urge householders, apartment house firemen and representatives of industry to visit the League headquarters, 6101 Olive Street Road, St. Louis County, where from 1 to 10 p.m. daily proper methods of firing various fuels are demonstrated.

Missouri Miners Meet To Form New Union

Mining men from Novinger, Kirksville, Connellsburg, Coal City, Bevier and Macon met at the Grand Theater, Macon, Mo., last week and adopted resolutions designed to result in the formation of a new miners' organization for the states west of the Mississippi River.

The reason for the move was stated in the first paragraph of the resolutions:

"After long and serious thought over the situation by the miners in the Southwest and realizing that the interests of the West are no longer the interests of the East, and after weighing our condition from every angle, it is hereby resolved that we form a new and independent organization of the miners west of the Mississippi River."

It was asserted by some of the delegates that the Missouri field was practically closed down by discrimination in favor of Illinois, and that long strings of Illinois coal cars were passing through idle coal fields in Missouri because of conditions that did not permit the Missouri miners to work.

It was stated that while Missouri coal was of quality for steaming locomotives, coal from other states was used in Missouri locomotives though there were inexhaustible beds of coal and plenty of men to work them.

It was also asserted the men at the meeting were friendly to the miners' union but that they wished to fix their own scales and contracts with operators west of the Mississippi. Existing national wage agreements have made it impossible to work unfavorably located or equipped mines.

A statement was made that while the Missouri miners had been without work since the suspension in April, 1924, they had received little if any benefit from the defense fund of the organization.

A committee of four was appointed to visit the Missouri coal fields and endeavor to arouse interest in the move to restore the coal industry in the state. It was stated the business men of towns were heartily in favor of it.



West Virginia Coal Mining Institute Steps Out Into the Sun

The registered attendance at the Institute numbered 147—an evidence of the interest shown in the opportunities for comparing notes, studying mining problems and making friends with others in the profession.

British Coal Strike Drags On As Peace Promises Fail

Promises of peace in the British coal strike, now in its third month, still prove non-negotiable. The Baldwin government, after driving the permissive eight-hour law through Parliament, has come forward with no new proposals for ending the suspension. On the other hand, it has flatly rejected the suggestion of a group of churchmen that there be a four months' truce, with subsidy payments to maintain the wage rates in effect prior to the walkout the first week in May. Subsidies, declared a spokesman for the government in a formal reply to the churchmen's plan made public on July 18, no longer can be countenanced.

The miners, backed by the Trades Union Congress, which has agreed to give the strikers all possible moral and financial support, are as unbending as the government and the coal owners. Now and then there is a vague rumor that peace is just around the corner, but nothing happens to substantiate such reports. The international "solidarity" of the mine workers so far has proved to be a myth. Funds to support their British brethren are forthcoming from the United States and Continental Europe, but exports to Great Britain continue.

Explains British Wage Offers

For most of the British miners acceptance of the 8-hr. day would mean an escape from a reduction in wages, according to Philip Gee, one of the spokesmen for the British coal owners. "Now that the offers put forward by the colliery owners in the various districts on the basis of an eight hour day are practically complete," he says, "it is possible to give an indication of what the mine workers will be enabled to earn on the resumption of work.

"Hewers, timbermen, laborers, pit-head and screenmen in the mining industry represent 71 per cent of the whole adult male workers in the industry. The following table, covering that 71 per cent, shows as accurately as possible the average wages which could be earned in the various districts for a full week under the new terms.

"It should be noted that the figures in the table are exclusive of the value of coal and rent allowances to house-

holders, averaging approximately 12s. per week in Northumberland and Durham, and 3s. per week for the rest of the country."

District and per cent of industry's total work- ers em- ployed	Per cent	— Underground —			Surface Pithed and Screen- men
		Hew- ers	Tim- bermen	La- borers	
South Wales*	20	90/6	67/11	52/9	54/6
Yorkshire†	16	83/2	77/9	55/3	55/10
Durham‡	14	64/6	58/3	42/5	51/9
Scotland*‡	11	71/	73/	54/1	41/1‡
Lancs, Cheshire & N. Staffs*‡	11	74/10	62/9	51/	47/9
Notts and Derby*‡	10	85/5	76/4	56/2	52/4
Northumber- land†	5	59/5	56/5	41/4	57/6
Cannock Chase†	2	75/5	60/4	41/5	42/7
Warwick†	2	86/	68/10	50/6	48/
North Wales§	1	...	...	...	...
Cumberland‡	1	...	...	...	...
S. Staffs and Salop*	1	82/9	53/1	45/7	40/1
Leicester*‡	1	72/5	57/	45/10	39/8
S. Derby*‡	1	79/7	62/1	46/5	44/6
Forest of Dean*	1	63/2	46/8	43/4	37/3
Somerset*‡	1	52/2	44/1	40/11	43/10
Bristol*‡	1	69/4	53/8	47/1	54/8

* No reduction.

† Ten per cent reduction.

‡ Increase on April.

§ Not yet published.

Glen Alden Cave-In Menaces Homes at Parsons, Pa.

Thirty-five families fled from their homes at Parsons, near Wilkes-Barre, Pa., on July 17 as a cave-in on the workings of the Glen Alden Coal Co. threatened to swallow up their abodes. Two large double structures have disappeared entirely into a hole 70 ft. deep. The settling started during Friday night.

The cave-in started about three weeks ago when seven men were killed and eight hurt in the Peach Orchard mine of the company. A second drop occurred July 10 and since that time there have been other minor settling.

Municipal authorities planned to throw open the school to take care of the refugees who were without accommodations.

The Borough Council is considering criminal prosecution of the Glen Alden company officials. The law under which this action could be taken provides a penalty of \$1,000 fine and 90 days' imprisonment for mining coal beneath a public highway. A similar case was tried and sustained by the courts about twelve years ago when Plymouth borough prosecuted officials of the Haddock Mining Co.

South Penn Mine to Stay Shut, Say Owners; Union Reports Lessee Signed Up

Following announcements made by union officials that the United Mine Workers had signed an agreement with P. D. McCrobie, of Star City, lessee, for the operation of the South Penn mine in the Scott's Run field of northern West Virginia on a union basis, T. B. Henderson, president and general manager of the South Penn Coal Co., and Ernest H. Gilbert, of the Gilbert-Davis interests, part owner, have issued an emphatic denial of the report. "We have decided to close the mine indefinitely and it will not be operated by McCrobie or anyone else," Mr. Henderson declares. "It is closed and will remain closed. I know nothing about an agreement with the union and nobody had authority to sign such an agreement."

Van A. Bittner, international union representative in northern West Virginia, declares the original contract for the operation of the mine is on file in his office, and quotes Mr. McCrobie as stating that he will operate the mine, notwithstanding the stand taken by Mr. Henderson and Mr. Gilbert.

Declaring that production statements issued by coal operators in the Scott's Run field are nothing more than "propaganda" and classifying them as entirely false, Van A. Bittner states that output is little more than one-tenth normal. Picket lines "are being gradually established in every coal-mining center in northern West Virginia," he declares.

Largest Glace Bay Mines Tied Up by Strike

Strikes at the two largest producing collieries of the British Empire Steel Corporation, at Glace Bay, N. S., are in progress. No. 2 mine, the company's largest producer, has been idle since July 13, when the drivers on the afternoon shift refused to work without a local contract. The day shift drivers did not turn out, and the plant is still idle. At mine No. 1B, which ranks second in production to No. 2, about 70 drivers went on strike. The tie-up came at a time when all the available coal is needed to load cargo steamers at Sydney.



News Items From Field and Trade



ALABAMA

Fifty First-Aid Teams Compete.—The eighth annual Alabama first-aid contest was held at the City Auditorium, Birmingham, July 10, with about fifty teams participating. The Empire team of the DeBardeleben Coal Corporation made the highest score for the white men's teams, with a percentage of 95%. No. 2 team of the New Castle Coal Co. was second with 95 per cent, and No. 1 team of the same company captured third place with 94 per cent. Among colored men's teams, Sipsey Mine of the DeBardeleben Coal Corporation was first with 92 per cent; New Castle team of New Castle Coal Co. second, with 91% per cent, and Acmar team, Alabama Fuel & Iron Co. third, with 90% per cent. The ladies' teams finished as follows: New Castle team, New Castle Coal Co., first, 95% per cent; Overton mine, Alabama Fuel & Iron Co., second, 92% per cent, and Corona No. 12, DeBardeleben Coal Corporation, third, 90% per cent.

The next semi-annual examination of applicants for certificates of competency as mine foremen and firebosses in Alabama coal mines will be held July 26-29 under the direction of Charles H. Nesbitt, chief mine inspector.

Warrior View Plans.—The Warrior View Coal Co., of which J. H. Lewis, of Birmingham, is the head, expects to spend over \$15,000 in improving its coal mines at Peterson, about 20 miles from Tuscaloosa. Among other things a new coal washer is being installed. This company has under lease 15,000 acres of coal lands and will lease other lands.

CALIFORNIA

File 37 Coal Leases.—Thirty-seven deeds and leases to coal land on Cow creek, Clover creek and Oak run have been filed for record, some of them voluminous. All the instruments are made out in favor of the Mount Shasta Coal Co., the corporation recently formed with a capitalization of \$10,000,000. The deeds and assignments are from P. B. Cross, A. F. Cross and other members of the syndicate that has been doing development work on the coal belt for two years. By recording these papers all the coal interests in Shasta County are consolidated under the ownership of the Mount Shasta Coal Co.

ILLINOIS

State Institute Plans Meeting.—Harrisburg has been chosen for the semi-annual meeting of the Illinois State Mining Institute in November. The Mining Institute is composed of

mine operators and mine inspectors, who meet to exchange ideas about the ever changing conditions in all coal fields. Because of some unusual conditions existing in the Saline County field at present, Harrisburg was chosen for the fall meeting. T. E. Coulehan is chairman of a committee arranging the program of the fall meeting. He will be assisted by R. E. McCleish, J. C. Kendall of the Saline County Coal Corporation; State Mine Inspector Thomas English; Lee Haskins, general manager of the Dering Coal Co.; George Haskins, superintendent of the mines for that company, and Paul Haberslaven, of the O'Gara Coal Co.

United Electric Expands.—The United Electric Coal Cos. have taken over the Chicago Collieries Co. holdings west of Danville. The purchase price is stated to have been \$405,600. This acquisition, together with the one made early in June at Duquoin, when the company took over 4,400 acres of land at a cost of between \$700,000 and \$800,000, will put the United Electric corporation among the large operating companies in the country. The company already operates strip mines west of Danville, at Cuba, Ill., and at Farmersburg, Ind., and new strip mines are being opened at Coal Bluff, Ind., sixteen miles from Terre Haute.

Taylor Mine No. 5 of the Franklin County Coal Co., five miles south of Ziegler, has resumed operations after being down two weeks. Mine A also has resumed. It was shut down a month.

Old Squirrel Reopens.—Mine A of the Chicago, Wilmington & Franklin Coal Co., Herrin, resumed work July 6. It is commonly known as the "Old Squirrel" mine. The mine has been closed for about a month.

Mine No. 19 of the Industrial Coal Co., Herrin, has resumed work after a three-weeks' shutdown for repairs. The colliery employs about 600 men. It formerly belonged to the Dering Coal Co. and is located near West Frankfort.

INDIANA

To Resell Pigeon Creek Holdings.—The bond of the objectors was approved and an order for a resale of the property made by Judge C. J. Lindsey at a hearing on the sale of the Pigeon Creek Coal Co. property, in the Warrick Circuit Court July 6. The plant was sold at public sale at Boonville June 21. The Pigeon Creek stripping plant was bid in by the Patoka Coal Co., of which James P. Goodrich, former Governor of Indiana, and W. R. Moorman are the principal owners, for the sum of \$61,500. The objectors to the sale, consist-

ing of the bondholders, headed by William R. Tapper, filed a bond to pay 10 per cent more than the bid price, plus the costs of a resale. A sale price of near \$80,000 is therefore assured.

Fire Destroys Climax Plant.—Practically all surface buildings at the plant of the Climax Coal & Clay Co., Saline City, were destroyed July 5 in a fire that burned several hours. The damage was estimated at \$150,000. The tipple, engine rooms, boiler house, clay crushing plant, washhouse and all other buildings on the property, with the exception of the office building were destroyed. While no definite cause has been assigned for the fire, the possibility that the fire was of incendiary origin has been mentioned.

The King Station mine of the Deep Vein Coal Co., near Princeton, which had been closed since May 6, during which time new screens and a coal preparation plant was installed, has resumed operations.

Fire Renders 100 Idle.—Fire on July 4 destroyed the big tipple at the Globe strip mines, six miles south of Petersburg. Origin of the fire has not been determined. The loss is estimated at more than \$10,000. One hundred men have been forced out of employment by the fire. The mine will not be able to resume operation for several weeks.

The work of rebuilding the tipple at the Westphalia mine, Vincennes, will be completed by Aug. 15. The work of tearing down and moving the tipple from the Martin mine at Bicknell, where it has done duty for several years, to the Westphalia mine occupied only 15 days. The Westphalia mine employed about 300 men, and hoisted 1,500 tons per day. The new tipple will be able to take care of a 2,000-ton capacity.

River Coal Royalties Over \$25,000.—Royalties collected by the State of Indiana on coal mined under the Wabash River in the last two and a half years total \$25,670.95, according to Richard Lieber, director of the state conservation department. The state collects 10c. on each ton of vein No. 4 coal taken from under the river and 5c. a ton on vein No. 5. Payment of the royalties started in December, 1923. The mining is done in the vicinity of Terre Haute. Conservation department officials say that in time the state will benefit from coal removed from Sullivan, Knox, Gibson and Posey counties, through all of which the Wabash River takes its course.

The Pennsylvania R.R., Lines West, has plans for a new coal dock at Fort Wayne with conveying, loading and other mechanical equipment.

KANSAS

The Walker Coal Co., of Pittsburg, which has been chartered with a capitalization of \$25,000, has leased 80 acres of top-vein coal three miles west of Pittsburg from the Western Coal & Mining Co. and will begin steam-shovel operation Sept. 1. The officers of the company are William Walker, president; Rollo Emmitt, vice president, and E. H. Frazee, secretary-treasurer. All have been engaged in the Kansas coal industry for some time.

KENTUCKY

Gets \$500,000 Mines for \$65,000.—Under orders of the federal court the bankrupt properties of the Rockport Coal Co., including mines at Rockport and Centertown, in western Kentucky, nine miles from Central City, were sold on July 10 to Harry L. Tucker, who has

work of two of his fellow workmen, Emit Clevinger, and C. E. Drake, who gave him artificial respiration, saved his life.

MINNESOTA

Not Proved.—A long-drawn-out investigation of the charges that different grades of coal were delivered to the Minneapolis Board of Education than that which was ordered came to an end with a report to the City Council that nothing had been proved that established any serious deviation. But it was suggested that the method of receiving coal delivered to the Board of Education left an opening for the delivery of wrong grades and sizes with little chance of detection.

State's Coal to Cost Less.—Bids for furnishing bituminous coal to various state institutions of Minnesota, when opened last week, were found to aver-

ssylvania by Dever C. Ashmead, of the U. S. Bureau of Mines, who spent some time in the Luzerne County region last fall. The work was done in conjunction with the state Geological Survey Bureau. The estimates of anthracite available outlined in a statement issued last spring are amplified with thirteen illustrations and twenty maps. Anthracite reserves are estimated at 16,350,676 000 tons, which, based on production at the rate of 131,000,000 tons annually, will last 124 years. The foreword of the bulletin says that in the principal anthracite field the recovery is 61.1 per cent and the total loss 38.9 per cent, of which 4.3 per cent is in preparation. A higher percentage of recovery in the anthracite industry also is forecast.

Insures Swimmers Against Cave-ins.

—The South Penn Collieries Co., Scranton, Pa., which owns mining operations in the north end of the city, has notified the city that it will surrender title to coal beneath the site of a proposed public swimming pool in North Scranton so that the resort will be saved from cave damage. The company also offers to give sufficient protection underground so that the lateral support of the pool will never be disturbed.

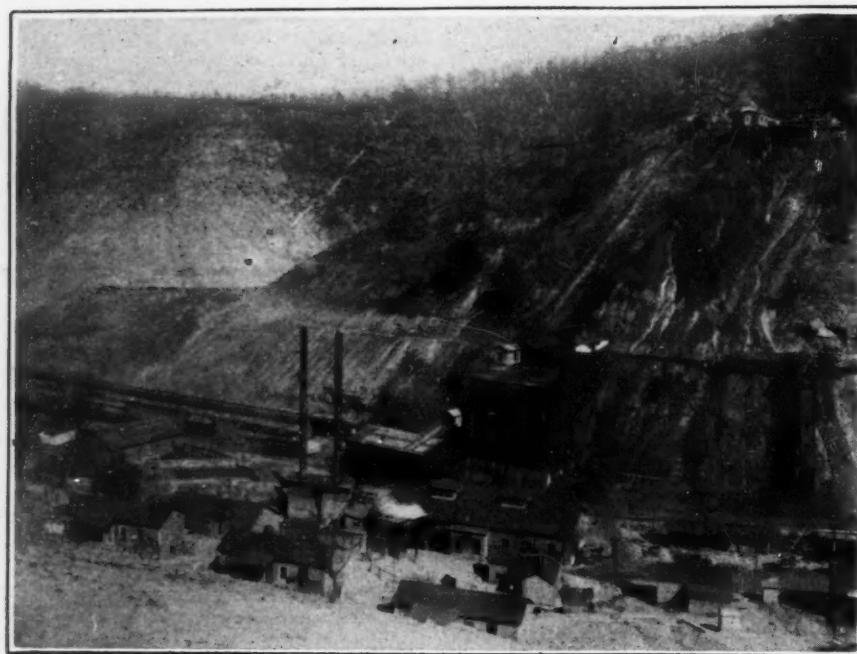
To Open Two New Mines.—The Jones & Laughlin Steel Co., of Pittsburgh, recently broke ground in Green County for the construction of two new mines, each of which is designed for a daily output of 2,500 tons. These mines are being opened up to meet the increased fuel demands of the company over and above the output of its other mines. The site of these plants is at Bobtown, where new houses are now being erected. The mines will be drifts in the Pittsburgh seam, and the coal from them will be hauled in mine cars over an outside tramroad 2½ miles to the Monongahela River, where a big river tipple will be erected. This tramroad is now being constructed. The operating company will be known as the Shanapin Coal Co.

To Use 70-Ton Cars.—The Lehigh Valley R.R. has announced that it expects to take delivery of 500 70-ton coal cars soon at Pottsville from a plant at Johnstown, Pa. Heretofore the largest cars in use in this part of the anthracite field were the 50-ton gondolas. The added 40 per cent to the coal-carrying capacity is expected to speed up coal delivery considerably. The Lehigh Valley road also has been laying new tracks on its Pottsville division so that the heavier trains can be handled with the greatest possible speed.

The Reading Co. has filed plans for the construction of a coal trestle with coal-handling facilities on Callowhill St., Philadelphia, to cost \$32,000.

More Barges for Hillman.—The Hillman Coal & Coke Co., Pittsburgh, has increased its order for steel coal barges for river movement. The original order was for twenty of these craft, but this has been raised to thirty. The new barges will be built at the Ambridge plant of the American Bridge Co.

New Pardee Breaker Under Way.—Pardee Brothers & Co., Inc., has work under way on a new breaker at Latimer Mines. The structure will cost more than \$200,000 with machinery.



In the Mountains of Eastern Kentucky

This mine of the Manufacturers Coal & Coke Co., operated by the Peabody interests, is located at Manco, at the end of the line of the right fork of Marrowbone Creek. The plant is equipped with 200 Mitchell horizontal-type ovens which are operated by mechanical chargers, levelers, waterers, pushers and loaders. About one-half of the mine production is now being coked. The other 500 tons per day is shipped as block and egg.

controlled the concern for some years. Tucker bid \$65,000 for the properties, which had an appraised value of \$233,000 and represented an investment of a half million. The power plant is practically new, and an effort was made by the Kentucky Utilities Co. to buy the power plant as a single unit, to use for commercial power production. Less than three years ago over \$30,000 was spent on new shaker screens, loading booms, etc. The two plants have around 30 cars or 1,500 tons daily capacity, about twenty cars at Rockport and ten at Centertown. The Centertown mine is on the Louisville & Nashville R.R., and the Rockport mine on the Illinois Central.

While at work near the opening of No. 3 Mine of the Coaldale operation of the Edgewater Coal Co. of Hellier, Ky. on July 12, Freeling Powell came in contact with a trolley wire. He was rendered unconscious but the quick

age 25c. lower than those received a year ago. The state requires about 125,000 tons of different sizes of soft coal. Fifteen bidders submitted offers.

OHIO

The Semet-Solvay Co. is contemplating the construction of a coke plant at Toledo adjacent to the Libby Glass Works.

The Globe Mining Co., Petersburg, is considering the rebuilding of its tipple which was destroyed by fire on July 5, with a loss of \$17,000.

PENNSYLVANIA

Hard Coal to Last 124 Years.—The state Department of Forests and Waters has issued an illustrated bulletin based on the recent discussion of anthracite losses and reserves in Penn-

UTAH

The Maple Creek Coal Co. has been granted a conditional permit to offer for sale 20,000 shares of common stock at par by the State Public Utilities Commission.

WEST VIRGINIA

May Open Big Tract.—The Lorain Coal & Dock Co. may open up a 16,000 acre tract of coal on Big Wheeling Creek, just south of Elm Grove, according to a semi-official report. Engineers of the company in eastern Ohio have been surveying the area during the last few weeks, with a view to making certain openings. The tract was purchased by the company about four years ago, but so far no development has been undertaken. If new mines are opened coal will be produced on a non-union basis. Three of the mines of the company in Belmont County, Ohio, are now closed down, apparently because of inability to operate under the Jacksonville agreement.

A certificate of dissolution was filed at the office of the Secretary of State on July 10 by the Greenmor Coal Co., of Elkins.

The Pittsburgh & Erie Coal Co. of Erie, Pa., a Pennsylvania corporation, has withdrawn its corporate relations in the State of West Virginia, according to a certificate filed in the office of the Secretary of State in Charleston on July 10.

San Polon, of Welch, has consummated a deal for the purchase of 900 acres of coal land on the Clear Fork branch of Tug River, near Welch. The tract is on Crane Trace, Meat House, Abbs Camp and other branches tributary to Clear Fork and on Laurel and Bear creeks. It adjoins the large tract owned by the Consolidation Coal Co. at Coalwood and is located about four miles below Coalwood.

May Cut Assessments.—Tentative decision to approve reductions in assessments on coal lands in the Clay and Battelle districts, Monongalia County, aggregating more than \$3,000,000 has been made by the county board of equalization and review. The two districts contain large veins of Pittsburgh and Sewickley coal. An effort is also being made to reduce the assessment on Freeport coal in Clinton district. The 10,000 acres of coal land in that district have been assessed at the rate of \$30 per acre.

J. M. Dalton and A. B. Fiffe, both of Princeton, who have been prospecting for coal in Monroe County, have opened and faced up one seam, it is said, which shows a thickness of about 6 ft. The coal is said to be of the anthracite type and while the drift mouth has not yet been driven back far enough to get into the best coal, the prospectors assert that indications point to an excellent product. No coal has ever been mined in Monroe County.

Careless Miners Fined.—Three prosecutions were made recently by state mine inspectors for violation of the state mining laws. Each man was fined \$25 and costs were imposed by justices of the peace. E. G. Green, a miner employed by the Elm Grove Min-

ing Co., Elm Grove, was accused of removing a danger board and proceeding to the working face; Earl Wesell, a coal loader employed by the Logan County Coal Corporation at McGregor mine No. 4, in Logan County, was charged with failing to timber his working place properly, and Bryan Gilbert, a coal loader employed by the Buffalo Creek Coal Co. at Accoville, Logan County, was alleged to have failed to timber his working place.

New Smokeless Seam?—More than passing interest has been created in McDowell County by the discovery of what appears to be a new seam of smokeless coal in the vicinity of Iaeger, which is now known locally as the McGowan seam but which, in the opinion of some experts, may be the Gilbert seam. Preliminary prospecting indicates that the area of the new seam comprises between 15,000 and 20,000

to \$10,000; Appalachian Fuel Co., from \$4,000,000 to \$625,000 preferred stock and from 40,000 shares of no par value to 15,000 shares of no par value; Guardian Coal Co., from 50,000 shares of \$50 each to 1,000,000 shares at \$2.50 each.

The Sterling Coal Co. Ltd., of Fairmont, W. Va., an Ohio corporation, with offices in Cleveland, withdrew its corporate relations from the State of West Virginia on July 13.

CANADA

April Output Tops Average.—The total production of coal from Canadian mines in April was 965,095 tons, as compared with 1,066,900 tons in March, and an average of 894,663 tons for the month during the five preceding years. Imports for the month were 858,052 tons, compared with 1,345,657 tons in March, and a five-year average for



Looking Down the Right Fork of Marrowbone Creek

At this operation of the Manufacturers Coal & Coke Co. the upper and lower Elkhorn seams are mined. A rope-and-button conveyor extends from the upper seam to the lower, which is slightly above tipple height. The mine equipment and coke-oven machinery are operated by 275-volt direct-current power generated in the local plant. The boilers are hand-fired with fuel consisting chiefly of laminated coal picked at the tipple.

acres. This coal is said to be somewhat higher in volatile matter than the Pocahontas No. 3 seam but it screens in prepared sizes to the extent of about 65 per cent as compared with about 35 per cent for the Pocahontas No. 3. It is said to be well adapted for domestic use. The seam was first opened on the property of the Triple Pocahontas Coal Co. and is now being mined by the Red Bird Pocahontas Coal Co. It is almost 100 ft. above the Red Ash seam. The coal has an excellent roof and is uniform in thickness, experts are reported to have stated.

These West Virginia coal concerns have effected a reduction in their capitalization: Index Mines Corporation, Ltd., from \$100,000 to \$10,000; Brewer Coal Co., from \$100,000 to \$25,000; Fall River Pocahontas Collieries Co., from \$90,000 to \$30,000; Pittsburgh Placer Mining Co., from \$200,000 to \$50,000; Grant Coal Co., from \$450,000

April of 823,570. Exports were 57 per cent below those of March, the figures being 27,165 tons, as against 62,695. This was a decrease of 53 per cent from the 5-year average.

The mines at North Minto, N. B., are being operated steadily by the Minto Coal Co., which has been stimulating sales among householders by the use of advertising films showing scenes at the company's mines and quoting the carload prices at the mines.

What is stated to be the first shipment of coal from North Sydney to the outposts of the Royal Canadian Mounted Police in the far north was loaded on the steamer "Boethic," which sailed July 15.

A movement is afoot to persuade the Canadian National Rys. to use only soft coal mined in the Grand Lake region for locomotives operated in New Brunswick Province.

Among the Coal Men

Edward Cooper, prominent in the coal industry at Bramwell, W. Va., has been appointed by Governor Howard Gore of West Virginia as a member of the state Fish and Game Commission, and **Frank Haas**, consulting engineer of the Consolidation Coal Co., has been named for the board of registration for engineers.

James Ellwood Jones, vice-president, Pocahontas Fuel Co., Switchback, W. Va., and **W. H. Cunningham**, president, Burgess Branch Coal Co., Huntington, W. Va., have been named by Governor Gore of West Virginia as members of the delegation from that state to the annual meeting of the National Tax Association, which will be held at Philadelphia Nov. 15.

Phil. H. Callery, of Pittsburgh, Kan., who for several years was counsel for District 14, United Mine Workers, and has since then been personal attorney for Alexander Howat, deposed president, is a candidate for the Republican nomination for Congressman from the Third Kansas district at the primary Aug. 3. He was formerly identified with the Socialist Party and was executive secretary to Mayor George R. Lunn in Schenectady, N. Y., during the Socialist régime in that city a number of years ago.

James Moore, owner of the Crescent and Sunnyside coal mines in Evansville, Ind., took an active part in the recent drive to increase the membership of the Chamber of Commerce of Evansville.

J. T. Hatfield, president of the Hatfield Reliance Coal Co., of Cincinnati, resigned the office as of July 1 to become chairman of the company's board of directors. He is succeeded by Irvin Davis, former treasurer. Other changes are: Vice-presidents, Julius Fleischmann, J. T. Hatfield, Jr.; treasurer, W. W. Miller; secretary, F. J. Ed Bramlage; and assistant secretary and treasurer, August Helm. All have been connected with the firm for some time. Mr. Miller is in charge of its mines in Kentucky and West Virginia. Captain Hatfield, who is now at his home in LaJolla, Calif., will devote most of his time to formulating the policies of the organization now that he has been relieved of the detail work in connection with the mines, wholesale and retail organizations and his river and towing interests.

O. L. Samons, long connected with the Cincinnati office of Percy, Heilner & Son, has resigned and will remove to California, where he will settle permanently.

Warren Acker, independent coal operator, is not to enter the cabinet of Mayor E. B. Jermyn of Scranton, Pa. For weeks Mr. Acker was in line for the position, but he has turned it down finally and the Mayor has picked another man for the place. It is understood that Mr. Acker's suit against the South Penn Collieries Co. for heavy

damages was the real reason for his not accepting the city position, it being understood that one of the terms under which Mr. Acker sold his coal holdings to the South Penn company provided that for a certain number of years he would not accept any public office.



J. G. Bradley

J. G. Bradley, president of the Elk River Coal & Lumber Co., Dundon, W. Va., and formerly president of the National Coal Association, sailed July 7 on the "Empress of France" from Quebec for Southampton. Mr. Bradley, who is accompanied by his family, will be abroad until the latter part of August.

Robert Fagan, inside superintendent of the Lattimer mine of Pardee & Brothers, Inc., Scranton, Pa., has been granted a patent on a device which eliminates dust in rock drilling in the anthracite mines. This will eliminate water jackets now used and some coal-mining officials say it also will do away with rock miners' asthma.

Sir Thomas Tait, president of the Grand Lake Coal & Railway Co., operating in the Grand Lake territory, is domiciled at a St. Andrews (N. B.) hotel for the summer season, and will maintain closer touch with conditions in the company of which he is the head.

Obituary

Charles A. Hower, a former resident of Johnstown, Pa., died at his home in Oak Lane, Philadelphia, on July 13, aged 50 years. Mr. Hower was a noted civil and mining engineer. He went to Johnstown thirty years ago and, after working for some time with the Cambria Iron Co., became general manager of the Vinton Collieries Co. and later built the Boswell plant of the Merchants Coal Co. He was also chief engineer for the Webster Coal & Coke

Co. at Gallitzin. He spent some time in the Northwest after leaving Johnstown, returning to Philadelphia in 1914, where he was engaged in land development. He is survived by his wife, two daughters, four sons and a brother, Frank Hower, of Johnstown.

John A. Armstrong, secretary-treasurer and a director of the United Pocahontas Coal Co., Crumpler, W. Va., died last week at his home in Connellsville, Pa. Mr. Armstrong was one of the organizers of the old Indian Ridge Coal & Coke Co., which was afterward merged with the United company.

B. E. Bare, of the Weewin Coal Co., Thurmond, W. Va., died at a hospital in Charleston, W. Va., on July 7. Mr. Bare, whose home was in Charleston, was stricken with paralysis while at the mines. He was formerly an assessor in Fayette County. His widow survives. The remains were buried at Alderson on July 9.

New Companies

Alberta Canadian Collieries, Ltd., of Edmonton, Alberta, has been incorporated with a capital of three thousand shares without per value. The incorporators include William Hamilton, Adrian L. McGrath, Ada T. McGrath and others.

A charter was issued recently to the Valley Coal & Clay Co., of Gassaway, W. Va., but the development will be in Taylor County. The company is incorporated at \$50,000, and provision is made that not more than 10,000 acres of coal and mineral land will be developed. The incorporators are W. P. Bartlett, N. B. Hamric, H. F. Bender, J. B. Fisher and Alex Groves, all of Gassaway, W. Va.

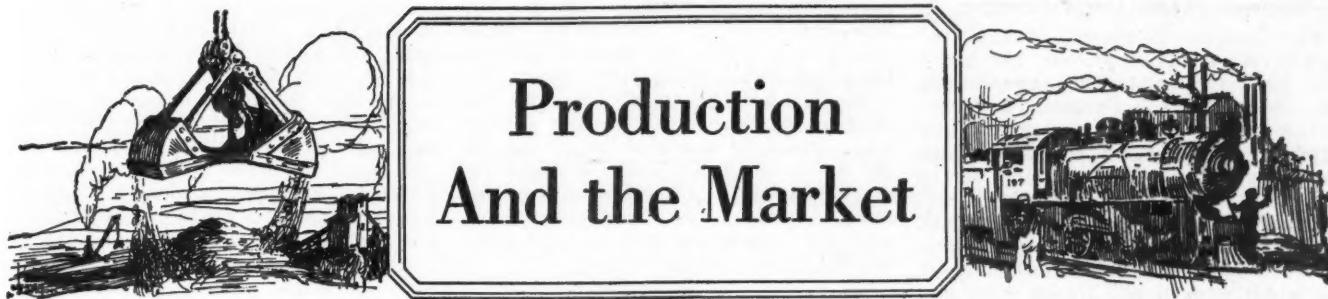
The Brown's Branch Coal Co., of Beckley, W. Va., obtained a charter on June 16 at the office of the Secretary of State in Charleston. The company is organized to mine, purchase and lease coal, and is capitalized at \$75,000. The chief works are at Quinnimont, Fayette County. The incorporators are T. R. Ragland, W. A. Stanley, C. H. Meador, J. B. Clifton and J. Q. Hutchinson, all of Beckley.

Petroleum Fuels Corporation, New York City, manufacturing fuels and petroleum products, has been chartered at Albany, N. Y., with \$200,000 capital. Frederick Erdman, 724 Knickerbocker Ave.; Clarence Kogan, 2078 E. 2 St., Brooklyn; George Bisgeier and A. F. Gessler, 198 Broadway, New York City, are subscribers. Mackinsty & Kornfeld, 198 Broadway, New York City, are attorneys for corporation.

Haileybury-Mattagami Coal Mines, Ltd., Haileybury, Ont., has been incorporated to mine and deal in coal, with a capital of \$1,000,000. Provisional directors are Milton E. Storms, Augusta Roach and Tillie Bromley.

The Hatcher Elkhorn Coal Co. was incorporated in Bigshoal, Ky., late in June by James Hatcher, J. B. Polley and others.

The Gorman Coal Mining Co., Knoxville, Tenn., with a capital of \$50,000, has been incorporated by Perry F. Gorman.



Production And the Market

Soft-Coal Trade Marked by Midsummer Dullness Save for Export Movement

Developments of overshadowing importance were strangers to the bituminous coal markets of the country last week. Superficially, the export movement alone distinguished the trading from the routine, uninspiring midsummer markets of earlier years. The majority of the changes which took place, however, were in the direction of betterment, even if their scope was limited. The most striking exception is to be found in price levels, which reflect little of the sweep of tonnage.

Output during the week ended July 10 was estimated at 8,290,000 net tons. This was the best holiday week record since 1923. Preliminary figures indicate that the output last week was well over the 9,000,000-ton mark. Cumulative production to July 10 was 280,157,000 net tons, as against 294,502,000 tons in 1923 and 275,580,000 tons in 1920. With the exception of 1923, output the first half of July was the highest since 1920.

The gain over last year's figures—34,511,000 tons—has not, as is well known, been evenly distributed. The lion's share of the increase has gone to the non-union fields. During the first quarter of the new coal year West Virginia production increased 6,071,000 net tons, or 22.42 per cent, as compared with a gain of only 2,448,000 tons, or 21.6 per cent, in Illinois. Kentucky chalked up an increase of 18.09 per cent, but union Indiana could do no better than 3.7 per cent and Ohio had to be content with an increase of 6.9 per cent.

Price Levels Recede Slightly

Price levels continue to be unsatisfactory, responding more readily to adverse than to favorable influences. *Coal Age* Index of spot bituminous prices on July 19 was 157 and the corresponding price was \$1.90. This was a loss of 1c. and one point when compared with July 12. Weakness in seaboard quotations was largely re-

sponsible for the change. Slight though the decline was, it was deeply suggestive of the remoteness of any repetition of the unhealthy price boom of 1920.

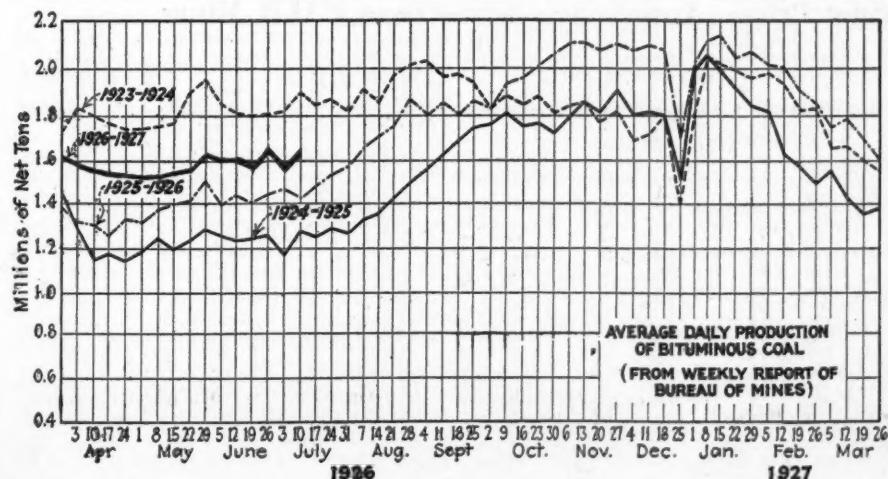
That inland prices show no sharp advances is easily understood. There is too much idle production capacity to allow the influence of unusual export buying to spread over the markets which may draw upon several fields to meet their requirements. That export quotations have advanced over such a narrow range, however, testifies to the sagacity of the British buyers; that they have sagged so little on the dips proves that the industry has been and is operating on a tissue-paper margin.

Anthracite Demand Weakens

Apathy characterizes the course of the anthracite market in domestic sizes. Movement, compared with last year, has been surprisingly good, being approximately 3,092,000 net tons ahead of the corresponding period in the coal year 1925-26. A slowing up, however, now appears to be inevitable. Householders are in no mood to add to their storage and retail distributors are not anxious to embarrass their financial standing by accumulating a line of frozen credits.

In sharp contrast to the lake trade in bituminous, water shipments of anthracite to interior ports are less than a year ago. Bituminous dumpings at the lower lake ports are well ahead of 1925. During the week ended July 18 dumpings totaled 987,306 tons of cargo and 55,296 tons of vessel fuel. This brings the season's total to date to 12,655,634 tons, as compared with 10,551,102 tons last year and 8,746,063 tons in 1924.

The Connellsburg coke market still is too weak to sustain any increase in free tonnage. Slightly heavier offerings last week dragged spot furnace quotations back to \$2.75@\$2.85. Spot foundry is moribund.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
June 26.....	8,662,000	9,846,000
July 3 (a).....	7,351,000	9,490,000
July 10 (b).....	8,639,000	8,290,000
Daily average.....	1,440,000	1,658,000
Cal. yr. to date.....(c)	245,646,000	280,157,000
Daily av. to date.....	1,524,000	1,737,000

ANTHRACITE

	1926	1927
June 26.....	1,800,000	2,087,000
July 3.....	1,477,000	1,970,000
July 10.....	1,809,000	1,545,000
Cal. yr. to date.....(c)	46,537,000	38,697,000

BEEHIVE COKE

	1926	1927
July 3 (a).....	119,000	163,000
July 10 (b).....	129,000	175,000
Cal. yr. to date.....(c)	5,437,000	6,877,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Midwest Steam Coals Stronger

The position of steam sizes in the Middle West has improved. Inquiries are increasing and price concessions are disappearing. Demand, however, is not strong enough to warrant any advance in quotations on coals which have been commanding the top of the market. Working time at the mines shows no gain in southern Illinois, where railroad orders have decreased. Railroad business, on the other hand, is the mainstay in the Mount Olive district and miscellaneous steam tonnage in central Illinois and Indiana.

Domestic trade is quiet and no district is wholly free from "no bills." Nevertheless, Franklin County operators announce an advance of 25c. on lump and egg, effective Aug. 1, and other Illinois and Indiana districts will follow their lead. No active buying, however, is expected until the crop movement has put money in circulation in the agricultural communities.

Business in smokeless prepared sizes

is picking up somewhat at Chicago, but mine-run is slow. Anthracite, while stronger, is below the normal volume. Coke producers, too, have been disappointed at the indifference of the buyers. Neither anthracite nor smokeless is making much of a stir in the St. Louis local market, but there is more buying of Illinois domestic for storage. Standard district coal is fighting hard against competition from western Kentucky.

Kentucky Outlook Improving

The price situation in the Kentucky fields is improving. Less shading of quotations is indulged in and some measure of success is meeting the efforts of leading interests in the western part of the state to establish minimum quotations on domestic coals. In eastern Kentucky mine-run lacks strength. In both sections there still are shippers ready to make concessions to move good sized blocks of tonnage.

Eastern Kentucky block brings \$2

@\$2.50, with the bulk of the offerings at \$2@\$2.25. Lump and egg are \$1.75 @ \$2; nut, \$1.60 @ \$1.75; mine-run, \$1.30 @ \$1.65, with some byproduct coal up to \$1.75. Western Kentucky block, lump and egg are \$1.50 @ \$2; nut, \$1.35 and up; mine-run, \$1.10 @ \$1.40, with occasional sales at \$1.50; screenings, 80@90c. The general run of eastern Kentucky slack is \$1 @ \$1.10, with some gas coal at \$1.25.

All-rail steam demand, particularly from the public utilities, is good. The lake trade continues to absorb substantial tonnages from the eastern field. Southeastern buyers also are in the market with scattered orders. Western Kentucky is pressing Illinois and Indiana for steam business, but the volume of orders booked has been somewhat less than expected.

Docks Seek Price Stability

Dock operators are cheered by the hope that there will be no further reductions in quotations at the Head of

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

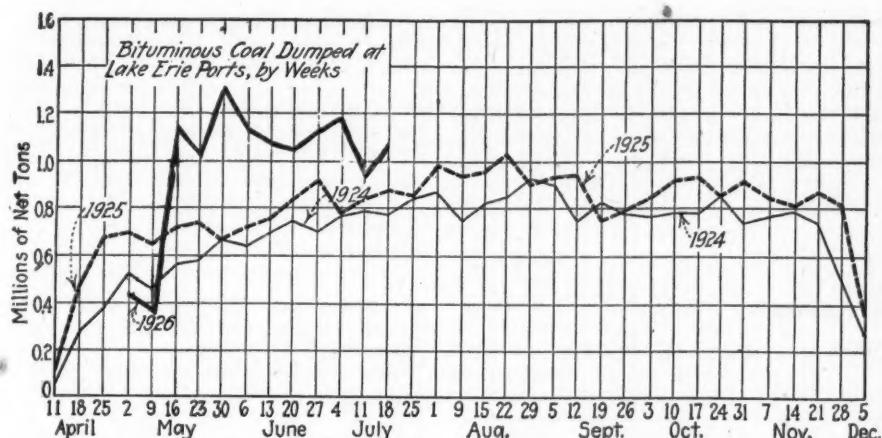
	Market Quoted	July 20 1925	July 5 1926	July 12 1926	July 19 1926†	Market Quoted	July 20 1925	July 5 1926	July 12 1926	July 19 1926†
Low-Volatile, Eastern										
Smokeless lump.....	Columbus....	\$2.85	\$3.10	\$3.10	\$3.00@ \$3.25	Franklin, Ill. lump.....	\$2.60	\$2.75	\$2.75	\$2.75
Smokeless mine run.....	Columbus....	1.85	2.10	2.10	2.00@ 2.25	Franklin, Ill. mine run.....	2.35	2.35	2.35	2.25@ 2.50
Smokeless screenings.....	Columbus....	1.35	1.25	1.25	1.20@ 1.40	Franklin, Ill. screenings.....	2.00	1.80	1.80	1.65@ 2.00
Smokeless lump.....	Chicago....	3.10	3.00	3.00	2.75@ 3.25	Central, Ill. lump.....	2.35	2.40	2.40	2.35@ 2.50
Smokeless mine run.....	Chicago....	1.90	1.90	1.90	1.85@ 2.00	Central, Ill. mine run.....	2.10	2.05	2.10	2.00@ 2.25
Smokeless lump.....	Cincinnati....	2.90	3.00	3.10	3.00@ 3.25	Central, Ill. screenings.....	1.70	1.50	1.50	1.40@ 1.60
Smokeless mine run.....	Cincinnati....	2.00	2.00	2.00	2.00	Ind. 4th Vein lump.....	2.60	2.40	2.40	2.25@ 2.60
Smokeless screenings.....	Cincinnati....	1.20	1.30	1.30	1.25@ 1.50	Ind. 4th Vein mine run.....	2.35	2.15	2.15	2.10@ 2.25
*Smokeless mine run.....	Boston....	4.30	4.40	4.40	4.30@ 4.40	Ind. 5th Vein lump.....	1.80	1.75	1.75	1.65@ 1.85
Clearfield mine run.....	Boston....	1.75	1.80	1.80	1.65@ 1.90	Ind. 5th Vein mine run.....	2.25	2.15	2.15	2.00@ 2.35
Cambridge mine run.....	Boston....	1.95	2.10	2.10	1.85@ 2.15	Ind. 5th Vein screenings.....	1.95	1.95	1.95	1.85@ 2.10
Somerset mine run.....	Boston....	1.85	1.95	1.90	1.75@ 2.00	Mt. Olive lump.....	1.50	1.50	1.50	1.40@ 1.60
Pool 1 (Navy Standard).....	New York....	2.55	2.60	2.60	2.50@ 2.75	Mt. Olive mine run.....	2.50	2.35	2.35	2.25@ 2.50
Pool 1 (Navy Standard).....	Philadelphia....	2.60	2.65	2.65	2.50@ 2.80	Mt. Olive screenings.....	2.25	2.15	2.15	2.15
Pool 1 (Navy Standard).....	Baltimore....	1.85	2.10	2.10	2.15@ 2.20	St. Louis.....	1.75	1.55	1.55	1.50@ 1.60
Pool 9 (Super. Low Vol.).....	New York....	1.95	2.10	2.10	1.90@ 2.25	St. Louis.....	2.25	2.25	2.25	2.25
Pool 9 (Super. Low Vol.).....	Philadelphia....	2.00	2.10	2.10	2.00@ 2.25	Standard mine run.....	1.80	1.80	1.80	1.75@ 1.85
Pool 9 (Super. Low Vol.).....	Baltimore....	1.75	1.80	1.80	1.80@ 1.90	Standard screenings.....	1.30	1.35	1.35	1.25@ 1.50
Pool 10 (H.Gr. Low Vol.).....	New York....	1.80	1.85	1.85	1.75@ 2.00	West Ky. block.....	1.55	1.70	1.70	1.50@ 2.00
Pool 10 (H.Gr. Low Vol.).....	Philadelphia....	1.70	1.85	1.85	1.75@ 2.00	West Ky. mine run.....	1.15	1.15	1.15	1.10@ 1.40
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	1.60	1.65	1.65	1.75@ 1.80	West Ky. screenings.....	.85	1.00	.85	.80@ .90
Pool 11 (Low Vol.).....	New York....	1.55	1.70	1.70	1.60@ 1.80	West Ky. block.....	1.90	1.75	1.75	1.65@ 1.85
Pool 11 (Low Vol.).....	Philadelphia....	1.55	1.55	1.55	1.45@ 1.70	West Ky. mine run.....	1.35	1.15	1.15	1.00@ 1.35
Pool 11 (Low Vol.).....	Baltimore....	1.40	1.60	1.60	1.65@ 1.70					
High-Volatile, Eastern										
Pool 54-64 (Gas and St.).....	New York....	1.50	1.40	1.40	1.30@ 1.50					
Pool 54-64 (Gas and St.).....	Philadelphia....	1.50	1.40	1.45	1.40@ 1.55					
Pool 54-64 (Gas and St.).....	Baltimore....	1.35	1.45	1.45	1.45@ 1.50					
Pittsburgh scd gas.....	Pittsburgh....	2.40	2.25	2.25	2.20@ 2.30					
Pittsburgh gas mine run.....	Pittsburgh....	2.15	2.00	2.00	1.90@ 2.10					
Pittsburgh mine run (St.).....	Pittsburgh....	1.95	1.75	1.75	1.60@ 1.90					
Pittsburgh slack (Gas).....	Pittsburgh....	1.50	1.25	1.25	1.20@ 1.30					
Kanawha lump.....	Columbus....	1.85	2.05	2.05	1.85@ 2.25					
Kanawha mine run.....	Columbus....	1.40	1.55	1.55	1.40@ 1.75					
Kanawha screenings.....	Columbus....	1.15	1.05	1.05	.95@ 1.15					
W. Va. lump.....	Cincinnati....	2.25	2.25	2.25	2.00@ 2.50					
W. Va. gas mine run.....	Cincinnati....	1.45	1.60	1.60	1.60@ 1.75					
W. Va. steam mine run.....	Cincinnati....	1.30	1.40	1.40	1.40@ 1.65					
W. Va. screenings.....	Cincinnati....	1.10	1.25	1.10	1.00@ 1.25					
Hocking lump.....	Columbus....	2.15	2.35	2.35	2.25@ 2.50					
Hocking mine run.....	Columbus....	1.50	1.55	1.55	1.40@ 1.75					
Hocking screenings.....	Columbus....	1.30	1.10	1.10	1.00@ 1.25					
Pitta. No. 8 lump.....	Cleveland....	2.20	2.15	2.15	1.80@ 2.50					
Pitta. No. 8 mine run.....	Cleveland....	1.85	1.70	1.65	1.70@ 1.80					
Pitta. No. 8 screenings.....	Cleveland....	1.50	1.05	1.15	1.15@ 1.25					
South and Southwest										
Big Seam lump.....	Birmingham....	2.00	2.45	2.45	2.20@ 2.75					
Big Seam mine run.....	Birmingham....	1.75	1.85	1.85	1.75@ 2.25					
Big Seam (washed).....	Birmingham....	1.85	2.00	2.00	1.75@ 2.25					
S. E. Ky. block.....	Chicago....	2.55	2.40	2.40	2.10@ 2.75					
S. E. Ky. mine run.....	Chicago....	1.70	1.55	1.55	1.40@ 1.75					
S. E. Ky. block.....	Louisville....	2.25	2.15	2.15	2.10@ 2.50					
S. E. Ky. mine run.....	Louisville....	1.55	1.50	1.50	1.30@ 1.65					
S. E. Ky. screenings.....	Louisville....	1.10	1.05	1.05	1.00@ 1.10					
S. E. Ky. block.....	Cincinnati....	2.25	2.15	2.15	2.10@ 2.30					
S. E. Ky. mine run.....	Cincinnati....	1.40	1.50	1.50	1.40@ 1.75					
S. E. Ky. screenings.....	Cincinnati....	1.10	1.10	1.15	1.00@ 1.25					
Kansas lump.....	Kansas City....	4.00	4.00	4.00	4.00					
Kansas mine run.....	Kansas City....	3.00	3.00	3.00	3.00					
Kansas screenings.....	Kansas City....	2.50	2.40	2.40	2.35@ 2.50					

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	July 20, 1925	Company	Independent	July 12, 1926	Company	Independent	July 19, 1926†	Company
Broken.....	New York....	\$2.34		\$8.15@ \$8.80		\$8.50@ \$9.25			\$8.50@ \$9.25	
Broken.....	Philadelphia....	2.39		8.70	\$9.25	8.50@ 9.15		39.25	8.50@ 9.15	
Ezz.....	New York....	2.34	\$8.75@ \$9.00	8.55@ 8.80	8.40@ 8.75	8.75@ 9.25	8.50@ 9.00	9.00@ 9.75	8.75@ 9.25	
Ezz.....	Philadelphia....	2.39	8.80@ 9.40	8.60@ 8.80	9.00@ 9.85	9.00@ 9.15	9.00@ 9.75	9.00@ 9.15	9.00@ 9.15	
Ezz.....	Chicago*	5.06	7.86@ 8.50	7.54@ 8.28	8.48	8.13	8.48	8.13	8.13	
Stove.....	New York....	2.34	9.10@ 9.40	9.05@ 9.30	9.25@ 9.60	9.25@ 9.50	9.25@ 9.60	9.25@ 9.60	9.25@ 9.50	
Stove.....	Philadelphia....	2.39	9.40@ 9.75	9.05@ 9.20	9.15@ 10.30	9.35@ 9.50	9.15@ 10.20	9.35@ 9.50	9.35@ 9.50	
Stove.....	Chicago*	5.06	8.22@ 8.70	8.02@ 8.20	8.84	8.33@ 8.58	8.84	8.33@ 8.58	8.33@ 8.58	
Chestnut.....	New York....	2.34	8.75@ 9.00	8.55@ 8.80	8.25@ 8.75	8.75@ 9.15	8.25@ 8.75	8.75@ 9.15	8.75@ 9.15	
Chestnut.....	Philadelphia....	2.39	8.80@ 9.65	8.70@ 8.80	8.75@ 10.05	9.00@ 9.15	8.50@ 9.75	8.50@ 9.75	9.00@ 9.15	
Chestnut.....	Chicago*	5.06	8.14@ 8.35	7.79@ 8.10	8.71	8.38@ 8.53	8.71	8.38@ 8.53	8.38@ 8.53	
Pea.....	New York....	2.22	5.25@ 5.50	5.00@ 5.80	6.00@ 6.50	6.00@ 6.25	6.00@ 6.50	6.00@ 6.50	6.00@ 6.50	
Pea.....	Philadelphia....	2.14	5.50@ 5.75	5.00@ 5.40	6.25@ 6.75	6.00@ 6.35	6.00@ 6.75	6.00@ 6.75	6.00@ 6.75	
Pea.....	Chicago*	4.79	4.91@ 5.36	4.69@ 5.00	6.03	5.65@ 5.80	6.03	5.65@ 5.80	5.65@ 5.80	
Buckwheat No. 1.....	New York....	2.22	2.00@ 2.50	2.50	1.50@ 2.25	3.00@ 3.50	1.50@ 2.25	3.00@ 3.50	3.00@ 3.50	
Buckwheat No. 1.....	Philadelphia....	2.14	2.15@ 2.75	2.50	2.15@ 2.50					



the Lakes. As a matter of fact, prices on gas coals are up 25@50c. Most of the shipments of steam coals moving off the docks at the present time are on contract orders. Spot buyers, both industrial and domestic, are doing little buying for storage purposes. Increased activity on the iron ranges has helped to swell the total steam tonnage.

Demand for screened smokeless coal for domestic purposes is improving. Coke, too, is in a better position. As a result, further curtailment in sales of anthracite is forecast. Receipts of hard coal up to June 30 were 176,072 tons less than for the same period last year despite the fact that the docks started the season with no stock on hand as contrasted with a carry-over of 200,000 tons in 1925. Bituminous receipts in the same period increased 621,030 tons over last year.

Coal buying at the Twin Cities shows a slight gain, but, on the whole, no great interest is displayed. Prices, however, are steadier. Milwaukee reports a good demand for all grades. Total receipts at the docks to July 12 were 1,529,425 tons, as compared with 1,339,798 tons during the corresponding period last year. The 1926 figures include 284,932 tons of anthracite; this was less than in 1925.

Southwestern Market Steady

A steady demand for Kansas nut coal for threshing still features the Southwestern market. Lump is draggy. Screenings are easy, and some operators report a surplus. This, however, is offset by a shortage at other mines. The demand for Arkansas semi-anthracite for summer storage is about as it has been for the last month.

Actual movement of coal from Colorado mines has been sluggish, but inquiries are on the increase. Some apprehension is felt by retailers in Oklahoma, Kansas and Texas lest the heavy crop traffic cut into the supply of box cars for coal loading. This fear, however, has not been translated into any rush of orders, except possibly in the Crested Butte anthracite district, which is now booked into the winter. Steam trade is fair.

Utah production is slowing up a little, following the May-June court brought about by the slashing of prices on lump. Slack, which caused the reduction, now is easy and there also are some troublesome accumulations of nut. Reaction to the price concessions has been uneven. There seems to be little likelihood of a change in current quotations.

mand is strong, but inland orders are backward. Free spot tonnage, however, has been fairly well cleaned up for the time being and a scramble later on is not unlikely. Local retail trade at Cincinnati is slow. River movement is heavy for this season of the year.

The interchange of coal loads through the Cincinnati gateway last week totaled 12,307 cars, an increase of 1,308 cars over the preceding week and 194 more than during the second week in July, 1925. Included in this total were 3,637 cars en route to the lakes, as against 3,240 cars the week preceding. Interchange of empties en route to the mines totaled 13,680 cars, as against 11,686 cars the first week of the month.

No Break in Central Ohio

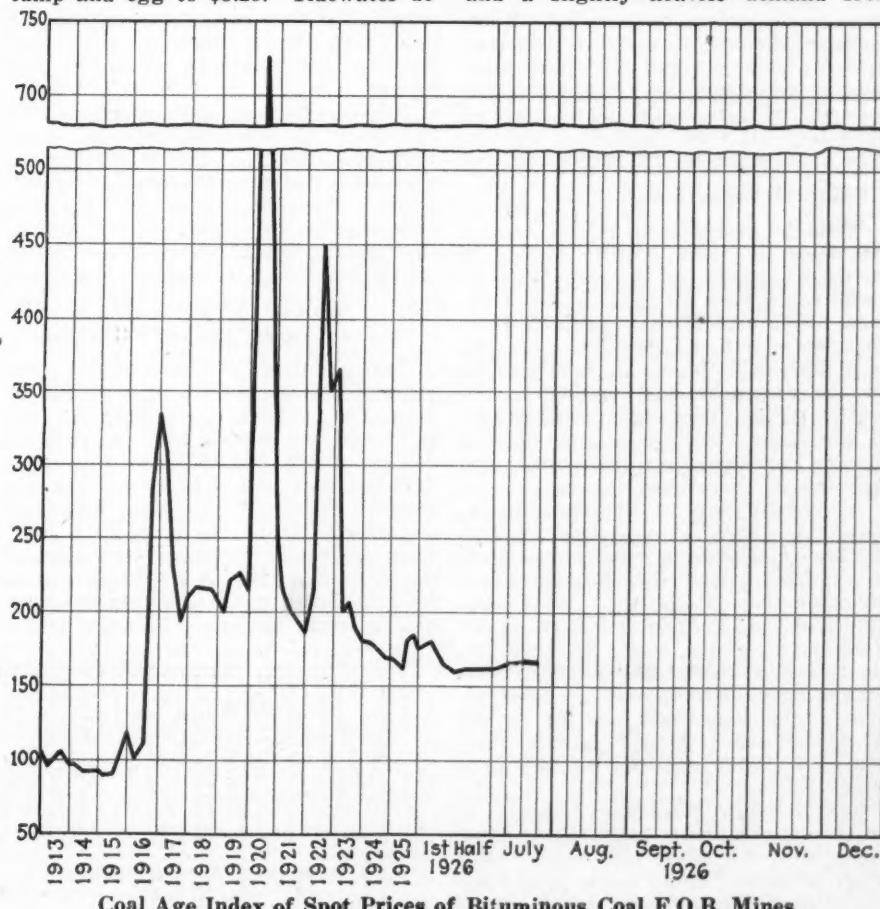
Sustained quiet buying by retail distributors gives the domestic market in central and southern Ohio a healthy tone. Willingness of the dealers to lay in modest storage stocks is spurred on by a revival of interest on the part of forehanded householders. Most of the buying is restricted to the higher priced coals. Steam trade continues a hand-to-mouth proposition, but the aggregate volume of business is considerable. Screenings are firmer. Ohio production shows no material change.

Less pressure from non-union fields and a slightly heavier demand from

Brisk Trading at Cincinnati

The upturn which began in the Cincinnati market with the opening of export demand several weeks ago continues. Buying pressure from tidewater and lakes has eliminated cheap offerings of steam coals. Good grade mine-run now brings \$1.50 as a minimum. Inquiry for the better grades of gas and byproduct coal has expanded. High-volatile egg has taken on new life, slack prices are firm and there is less unsteadiness in block and lump.

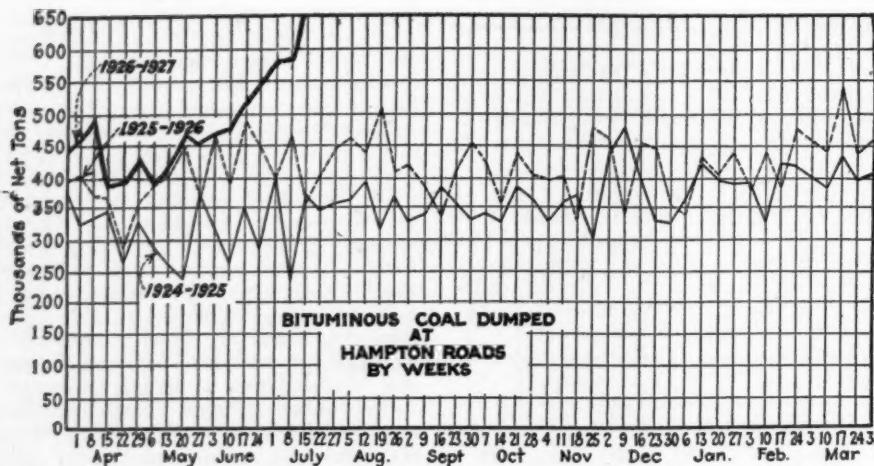
Low-volatile, too, is on the rise. A number of shippers have advanced spot lump and egg to \$3.25. Tidewater de-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925	1924
Index.....	July 19 157	July 12 158	July 5 158
Weighted Average price.....	\$1.90	\$1.91	\$1.91
	June 28 157	July 20 160	July 21 163

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



consumers gave the northern Ohio market a better outlook last week. Spot quotations on slack and nut-and-slack moved up a nickel and mine-run gained a dime. There was little distress coal to be picked up around Cleveland and comparatively few "no-bill" cars at the mines.

Optimism is growing in the Pittsburgh district, but there is little justification for the better feeling from the standpoint of immediate buying and none from the standpoint of price. In fact, an increase in lump movement gave slack a few bad days. Some export business has been booked, but most of the orders have gone to Westmoreland County, where \$2.10 has been paid for mine-run and \$2.25 for three-quarter screened gas. Producers who have had a taste of this buying are so sanguine that some claim they will not take on new orders for several weeks.

Central Pennsylvania Prices Up

With the exception of pool 71, which weakened a nickel on the maximum quotation, prices on central Pennsylvania coals were up 5@10c. last week. Pool 1 was \$2.45@\$2.75; pool 71, \$2.25 @\$2.35; pool 9, \$2.10@\$2.25; pool 10, \$1.80@\$2; pools 11 and 18, \$1.60@\$1.70. The improvement was credited to the British strike. Production the first half of the month was below June figures for the corresponding period, but this was due to the holiday losses.

A ten-cent jump in maximum quotations on Maryland smokeless brought the low-volatile lump range in the Buffalo market to \$2.75@\$3.30, with prices on other sizes unchanged. Westmoreland gas lump is \$2.50 and slack, \$1.50; Youghiogheny gas lump, \$2.15@\$2.35; slack, \$1.25@\$1.35. The nominal quotations on high-volatile steam coals remain at the same levels held for several weeks. Slack in actual trading, however, is weaker and the market as a whole lifeless.

The Toronto bituminous market is quiet. Wagon steam lump has dropped from \$6.35 to \$6.25 and slack from \$5.55 to \$5.50. Retail trade in anthracite is somewhat slow, but the prospects for an early increase are bright. There is considerable Welsh coal on the local market and householders are viewing it with favor.

Prices Weaker in New England

Steam-coal prices in the New England market have weakened. Offshore

demand has failed to hold up quotations to recent figures and there is nothing in the domestic steam situation to justify predictions of a higher range in the near future. On the contrary, vessel rates to New England have eased off. Nominal quotations on Navy Standard at Hampton Roads are \$4.35 @\$4.50, but offers at less have been accepted.

There is keen competition to place cargoes arriving at the New England ports. Prices on cars for inland delivery at Boston and Providence are \$5.30@\$5.40. Sales of all-rail central Pennsylvania are light. Receipts by water from Baltimore, Philadelphia and New York also are limited. Close canvassing for business produces few orders.

Heavier buying, principally by the railroads, has cheered the New York bituminous trade. Chief interest, however, is centered in the export market. Local industrial consumers, nevertheless, express no concern over diminishing storage stocks. Prices are fairly steady, although occasional sales are made at 5@10c. under the general list.

Railroad Buying Helps Philadelphia

The situation at Philadelphia has many points of resemblance to that at New York. Local consumers for the most part are unmoved by the possible effects of the British strike on home supplies, but railroad buying has increased. Most of the orders placed at the present time are for pool 9 coal. Less desirable grades of low-volatile are distinctly slow. In the high-volatile field the medium grades are showing slightly more firmness. So many mines

Car Loadings and Supply

	<u>Cars Loaded</u>	
	<u>All Cars</u>	<u>Coal Cars</u>
Week ended July 3, 1926.....	1,072,624	172,713
Week ended July 11, 1925.....	982,809	160,444
Week ended July 4, 1925.....	864,852	134,030
<u>Surplus Cars</u>		
	<u>All Cars</u>	<u>Coal Cars</u>
June 30, 1926.	254,807	69,869
June 23, 1926.	270,162	76,594
June 30, 1925.	307,495	109,404
<u>Car Shortages</u>		
	<u>All Cars</u>	<u>Coal Cars</u>
.....
.....
.....

are down that bargain hunters occasionally experience difficulty in obtaining prompt shipments.

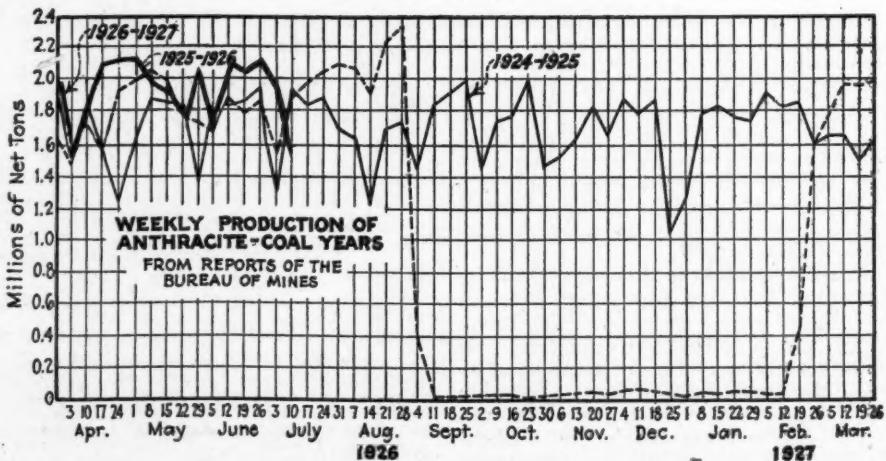
The export situation continues to dominate the Baltimore bituminous market. Most of the buying for Great Britain has been handled by three companies, and prices, volume considered, have been held in check. Vessel rates, which jumped sharply when the export orders first began to roll in, have broken; charters can be had at \$3.75@\$4, as against \$4@\$5 a fortnight ago. Prices on low-volatile coals for home delivery are stronger, but the general market is colorless.

There has been no change for the better in the Birmingham market. Washed coals for coking top the demand in spot trading. Domestic movement is slow because householders are reluctant to put coal in storage. This has led to a restriction of contract shipments and further weakness in the spot market. Prices, however, are well maintained because shippers have learned that concessions will not stimulate business. The metallurgical coke market is quiet, but shipments for domestic uses are up to the seasonal average.

Anthracite Quiet at New York

The anthracite market at New York is quiet. Demand receded last week. Retailers appear to be well stocked and there is little new winter storage business coming from consumers. Production at the mines has been curtailed. Chestnut is the weak sister in the domestic family; pea remains in fair demand. There has been no improvement in the steam market.

At Philadelphia, too, the market is disappointingly inactive, with retail buying light because cautious dealers do not want to swell the credit business on their books. Independent prices are weaker, particularly on nut, where "blocks" have been moved on a "confidential" basis of price, which has



brought sales down to \$8.50. Some concessions also have been made on egg and stove, but the latter still is the leader in demand.

The Reading surprised the trade by increasing its price on pea 25c. this month in the face of a growing weakness in this size in the independent market. Steam sizes are heavy and some of the independents are making desperate cuts to move their surplus. Trade at Baltimore is quiet.

Lake Shipments Recover

Lake shipments of anthracite from Buffalo made a quick recovery from the holiday slump. During the week ended July 15 total dumpings were 129,200 net tons. Duluth and Superior took 73,200 tons; 35,200 tons were cleared for Milwaukee, 6,500 tons for Waukegan, 6,300 tons for Chicago and 3,000 tons for Marinette. To date 133 cargoes have been cleared from Buffalo. Local demand is quiet.

The appearance of a small floating supply of free coke in the Connellsburg region last week brought spot furnace prices down to \$2.75@\$2.85, as against \$2.85@\$3 during the holiday period. Foundry coke held to the old \$4@\$4.50 range, with little movement. Furnaces in operation are covered by contracts so that there is no interest in that question at the present time.

Production in the Connellsburg and Lower Connellsburg region during the week ended July 10 was 127,650 tons, a decline of 10,550 tons, according to the Connellsburg *Courier*. The decline of course, was due to the holiday. Furnace-oven output was 68,300 tons, or 5,200 tons less than in the preceding week. Merchant-oven production was 59,350 tons, a decrease of 5,350 tons.

Malay Coal Company Has Big Year; Outlook Bright

Singapore, Straits Settlements, May 20.—At the annual meeting of Malayan Collieries, Ltd., one of the largest coal companies in British Malaya, a dividend of 32½ per cent for the past fiscal year was declared. The chairman, H. N. Ferrers, said, "The financial result of the year's trading is again the largest on record, the gross revenue showing the substantial expansion of \$373,789. Considerable additions have been made to railway sidings, buildings, and plant and machinery during the year, but the liberal depreciation provided more than counterbalances the additions. This completes the construction work and the wharf with its mechanical loading appliances.

"The expenditure on development account is confined to the cost of the extensive underground development, in driving a new tunnel, in opening out the workings generally to cope in an economical manner with the greater output expected, and to win the superior coal of the bottom seam.

"The Perak hydro-electric scheme has now taken definite shape. The local government has granted a concession to Sir W. G. Armstrong Whitworth & Co., Ltd., for the supply and distribution of electric energy in the State of Perak, but the concession is not a monopoly."

Daily Byproduct Coke Output Near Peak in June

Production of byproduct coke in the United States during June, according to the Bureau of Mines, declined 112,000 net tons when compared with May, the decrease being due to the shorter month. The daily rate of output rose from 120,079 to 120,321 tons, a level which has been exceeded only four times in the history of the byproduct coke industry. The total production for June amounted to 3,610,000 tons, compared with 3,722,000 tons in May. The plants operated at about 88 per cent of capacity. Of the 81 plants in existence 7 were idle and 74 active.

Beehive coke production continued to decline during June, the total being estimated at 811,000 tons, a decrease of 73,000 tons, or 8 per cent, when compared with May.

The output of all coke was 4,421,000 tons, the byproduct plants contributing 82 per cent and the beehive plants 18 per cent.

Output of Byproduct and Beehive Coke in the United States by Months (a)

	Byproduct Coke	Beehive Coke	Total
1923			
monthly average	3,133	1,615	4,748
1924			
monthly average	2,833	806	3,639
1925			
monthly average	3,332	893	4,225
March, 1926	3,777	1,58	4,955
April, 1926	3,602	981	4,583
May, 1926	3,722	884	4,606
June, 1926	3,610	811	4,421

(a) Excludes screenings and breeze.

The total amount of coal consumed in byproduct and beehive coke plants in June was 6,465,000 tons, 5,186,000 tons at byproduct plants and 1,279,000 tons at beehive plants.

Estimated Monthly Consumption of Coal in Manufacture of Coke

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1923			
monthly average	4,523	2,507	7,030
1924			
monthly average	4,060	1,272	5,332
1925			
monthly average	4,787	1,371	6,158
March, 1926	5,426	1,826	7,252
April, 1926	5,176	1,547	6,723
May, 1926	5,348	1,394	6,742
June, 1926	5,186	1,279	6,465

Of the total production of byproduct coke in June, 2,984,000 tons, or 82.7 per cent, was made in plants associated with iron furnaces and 626,000 tons, or 17.3 per cent, was made at merchant or other plants.

Bunker Contract Awarded To J. H. Weaver & Co.

J. H. Weaver & Co., of New York City, were awarded a contract on July 16 to supply bunker coal to meet the requirements of the Emergency Fleet Corporation at New York from July 15 to April 30 next. The contractors will supply a total of 114,000 tons, for which they will receive \$6.15 per ton for coal furnished to passenger vessels and \$5.80 a ton for that furnished to cargo ships. Bids for the furnishing of this coal were opened by the corporation on July 7, five bids being received.

Traffic News

Deny Petition for Rate Boost In Western District

The Interstate Commerce Commission has rejected the petition of the carriers in the western section of the United States for an increase in freight rates. This petition, commonly referred to as *Ex Parte 87*, was a part of the general rate-structure investigation under Docket 17000. Hearings were held in Chicago and many Western cities during the fall and winter wherein the railroads made an effort to prove that there existed an emergency which warranted the Commission in increasing their rates at least 5 per cent generally. They proposed a flat increase on coal and coke of 15c. per ton. Many other articles were to carry flat increases.

Soon after the enactment of the Hoch-Smith Resolution, which caused the I.C.C. to institute a general rate-structure investigation, the carriers in the Western district filed a petition for an increase in their revenues. After numerous hearings, and briefs and oral arguments, the Commission has reached the conclusion that the showing made by the railroads as to emergency does not warrant the increases sought. The record is held open for further consideration in connection with Docket No. 17000 and related proceedings. It is understood from this decision that the Commission will go ahead with its general rate-structure investigation, and this action on its part merely disposes of the carriers' petition for an increase in rates.

Chicago Coal Merchants Seek More Favorable Rates

Complaint has been filed with the Interstate Commerce Commission (Docket 18504), Chicago Coal Merchants Association vs. C. & N.W.R.R., alleging violation of Sections 2 and 3 of the Act in the transportation of anthracite and bituminous coal from interstate points of origin to Weber, Greenwood Boulevard and Evanston (Ill.) stations. The establishment of just and reasonable rates is asked.

West Virginia Mines Ask Lower Rates to Buffalo

The Acme Coal Co. and about 120 other coal companies operating bituminous coal mines in the state of West Virginia along the line of the Baltimore & Ohio R.R. from Fairmont, W. Va., to Clarksburg, W. Va., have filed complaint with the Interstate Commerce Commission in Docket 18514 against the B. & O. and Erie R.R. companies, attacking a rate of \$2.58 per net ton on bituminous coal from the originating points above mentioned to Buffalo rate group point shown in B. & O. coal and coke tariff I.C.C. 25850. The complaint alleges that the rate should be reduced to \$2.39 and asks that the Commission so order.

Foreign Market And Export News

Shortage Threatens France

Paris, France, July 8.—Demand for coal is growing daily, but offers of free tonnage are vanishing. That the scarcity of spot coal is due to exports to Great Britain is vigorously denied by coal interests, who assert that shipments in that direction have absorbed less than 0.5 per cent of the output of the Nord and Pas de Calais fields. Nevertheless, the government has established a licensing system to control the export movement. Bunkers also come under the ban unless specially authorized by the French harbormaster.

No change was made in prices on raw French coals the first of the month. Briquets, however, were increased 10 fr. per ton.

The question of prices on indemnity coke is attracting much attention these days. A week ago it was rumored that coke and coking smalls would be relieved from control with the proviso that only one part of the fuel could be credited to reparations in kind. The drawback is that such a system probably would mean an increase of 40@50 fr. in prices. It is feared that consumers would seek other sources of supply and the government thereby would lose the profit it now makes in handling the reparation coke. No final decision has been reached.

During June the Ruhr shipped the O.R.C.A. 222,286 metric tons of coke, bringing the total for the half year to 1,616,637 tons.

The French mines produced 3,866,054 metric tons of coal, 76,074 tons of lignite, or a total of 3,942,128 tons in May, as against 4,100,422 tons in April.

Belgian Market Runs Wild

Brussels, Belgium, July 7.—The speculative market in coal is running wild. Prospective buyers denied tonnage immediately raise their bids 10, 15, 25 or 50 fr. in order to be assured of early deliveries of some tonnage. On top of the home demand comes increased inquiry from foreign consumers, who are ready to pay 160@170 fr. for beans and 230@240 fr. for screened coal.

Since June 1 prices have been increased from 12@25 fr. Raw semi-bituminous smalls are nominally quoted at 100 fr.; semi-washed semi-bituminous smalls, 115; lean smalls, 95; washed semi-bituminous duffs, 105; washed lean duffs, 82; raw lean duffs, 65; semi-bituminous peas, 135; lean peas, 125; coking smalls, 135; briquets, 180 fr. Quotations on domestic coals range from 150 fr. on 50 x 60 mm. semi-bituminous unscreened to 240 fr. on anthracite cobbles.

Prices on indemnity coal and coke have been raised 15 fr. since the first of July. Quotations on coking coals are up 15 fr. and the same increase has been applied to semi-bituminous. Gas coal prices, on the other hand, are un-

changed. Lean washed and unwashed duffs have been advanced from 75 and 71 fr., respectively, to 85 and 81 fr.

Belgium produced 1,846,440 metric tons of coal in May and 1,984,000 tons in April. Stocks at the end of May had decreased from 1,291,850 to 947,590 tons.

All Loading Records Likely to Fall At Hampton Roads

All records for coal shipping at Hampton Roads, which for many years has held a place of pre-eminence among coal-handling ports, appear in a fair way of being broken by the coal business of July, after every dumping record except one had been broken in June. Approximately 1,100,000 tons of coal was dumped at the Hampton Roads terminals during the first 14 days of the month, with an almost continuous procession of ships still making their way to port.

The unprecedented coal movement, due largely to heavy orders from the British government through private agents, has had its effect in the southern West Virginia mining territory, bringing the first real boom in coal mining for more than a year. Many smaller operations in that section which were running two or three days a week at best are now operating full time.

So heavy has been the movement of coal through the Chesapeake & Ohio terminals at Newport News, where the bulk of the high-volatile coal bought for United Kingdom ports is moving, that a score or more of ships have had to be transferred from that port to the Sewalls Point piers of the Virginian Ry.

During the second week of July twenty Spanish vessels, an unusual sight in Hampton Roads, entered that port for coal, mostly for the United Kingdom. The month opened with 128 vessels scheduled to load coal during the month, and a number of others have been added to the schedule in the meantime.

Export Clearances Week Ended July 15

FROM HAMPTON ROADS

	Tons	
For United Kingdom:		
Br. Str. Spenser	5,579	
Span. Str. Ardantza Mendi	6,172	
Br. Str. Bellview	7,647	
Br. Str. Grelstone	6,720	
Br. Str. Dorking Court	6,720	
Br. Str. Lady Astley	4,861	
Br. Str. Wadsworth	5,589	
Br. Str. Anglo Indian	8,956	
Br. Str. Blairadam	4,241	
Br. Str. Redgate	5,966	
Du. Str. Zaandijk	5,453	
Br. Str. Barr Hill	7,473	
Grk. Str. Atlanticos	7,939	
Br. Str. Datchet	4,705	
Span. Str. Jata Mendi	6,208	
Br. Str. Ocean Prince	7,595	
Span. Str. Alu Mendi	4,916	
Br. Str. King Iwal	7,359	
Br. Str. Drakepool	7,845	
Br. Str. Euphorbia	5,189	
Du. Str. Kelbergen	7,578	
Br. Str. Otarama	8,447	
Br. Str. Essex Envoy	7,230	

Nor. Str. Frogner	8,362
Br. Str. Greeden	6,846
Er. Str. Tremayne	5,951
For Jamaica:	
Nor. Str. Jose, for Kingston	1,225
Nor. Str. Manchroneal, for Kingston	1,432
Br. Str. Macabi, for Kingston	3,337
For Brazil:	
Br. Str. Nollsemen, for Bahia	6,513
Br. Str. Mistley Hall, for Rio de Janeiro	6,079
For Canada:	
Br. Schr. Avon Queen, for Prince Edward Island	1,336
Nor. Str. Dago, for St. Johns	1,470
For Argentina:	
Br. Str. Orange River, for Buenos Aires	6,390
For England:	
Br. Str. Remenbam, for Newcastle-on-Tyne	5,254
Span. Str. Arinda Mendi, for River Mersey	4,944
For Italy:	
Span. Str. Cabo Tortosa, for Genoa	5,039
Ital. Str. Caterina Gerolimich, for Fiume	1,752
For Algeria:	
Amer. Str. Noblis, for Iran	3,499
For Cuba:	
Nor. Str. Sagalan, for Havana	3,899
* For Scotland:	
Br. Str. Lornaston, for Glasgow	7,487
For Greece:	
Grk. Str. K. Hadjipateras, for Piraeus	6,750
For Newfoundland:	
Du. Str. Wassenaar, for Cornerbrook	2,905
For Uruguay:	
Belg. Str. Roi Leopold, for Montevideo	5,256

FROM BALTIMORE

For Ireland:	
Br. Str. Mortlake, for Dublin	4,652
Br. Str. Ardenhal, for Queenstown (for orders)	7,386
Span. Str. Arola Mendi, for Queenstown (for orders)	7,340
Br. Str. Bedeburn for Queenstown (for orders)	4,483
Nor. Str. Ovre for Queenstown (for orders)	6,435
Dan. Str. Emilie Maersk, for Cork	3,427
Span. Str. Agire Mend, for Queenstown (for orders)	7,727
Jap. Str. Oregon Maru, for Queenstown (for orders)	7,679
For England:	
Br. Str. Greenwich, for Lards End	5,566
Br. Str. Royal Transport, for Liverpool	7,215
Br. Str. Epson, for Dover	6,509
Br. Str. Kepwick Hall, for Cardiff	7,214
For Portugal:	
Ital. Str. Valtellina, for Leghorn	8,190

FROM PHILADELPHIA

For Cuba:	
Nor. Str. Certo, for Habana	.....
For Nova Scotia:	
Br. Str. Sambro, for Dartmouth	.....

Hampton Roads Coal Dumpings*

(In Gross Tons)

N. & W. Piers, Lamberts Pt.:	July 8	July 15
Tons dumped for week:	195,218	218,999
Virginian Piers, Sewalls Pt.:		
Tons dumped for week:	125,757	166,899
C. & O. Piers, Newport News:		
Tons dumped for week:	196,672	204,948

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest

Pier and Bunker Prices, Gross Tons

	PIERS	BUNKERS
	July 10	July 17†
Pool 1, New York	\$5.40@ \$5.65	\$5.40@ \$5.65
Pool 9, New York	4.90@ 5.15	4.90@ 5.15
Pool 10, New York	4.60@ 4.85	4.60@ 4.85
Pool 11, New York	4.35@ 4.50	4.35@ 4.50
Pool 9, Philadelphia	4.85@ 5.20	4.85@ 5.20
Pool 10, Philadelphia	4.60@ 4.85	4.60@ 4.85
Pool 11, Philadelphia	4.30@ 4.55	4.30@ 4.55
Pool 1, Hamp. Roads.	4.45@ 4.50	4.55@ 4.50
Pool 2, Hamp. Roads.	4.25@ 4.30	4.25
Pool 3, Hamp. Roads.	4.00@ 4.10	4.00
Pools 5-6-7, Hamp. Rd.	4.20@ 4.30	4.10

BUNKERS

Pool 1, New York	\$5.65@ \$5.90	\$5.65@ \$5.90
Pool 9, New York	5.15@ 5.40	5.15@ 5.40
Pool 10, New York	4.85@ 5.10	4.85@ 5.10
Pool 11, New York	4.60@ 4.75	4.60@ 4.75
Pool 9, Philadelphia	5.10@ 5.35	5.10@ 5.35
Pool 10, Philadelphia	4.90@ 5.10	4.90@ 5.10
Pool 11, Philadelphia	4.55@ 4.85	4.55@ 4.85
Pool 1, Hamp. Roads.	4.45@ 4.50	4.50
Pool 2, Hamp. Roads.	4.25@ 4.30	4.25
Pools 5-6-7, Hamp. Rd.	4.20@ 4.30	4.10

†Advances over previous week shown in **heavy type**; declines in *italics*.

Coming Meetings

Fourth Annual West Virginia First-Aid Contest and First Annual Safety Day, Camden Park, Huntington, W. Va., Aug. 21. Managing Director, W. H. Forbes, Federal Building, Huntington.

Fifth International First-Aid and Mine-Rescue Contest, San Francisco, Calif., during the first week of September, 1926, under auspices of Bureau of Mines, Department of Commerce.

New York State Coal Merchants Association, United States Hotel, Saratoga Springs, N. Y., Sept. 2-4. Executive secretary, G. W. F. Woodside, Dolan Bldg., Albany, N. Y.

Rocky Mountain Coal Mining Institute. Glenwood Springs, Colo., Sept. 9-11. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

American Institute of Mining and Metallurgical Engineers, Oct. 6-9, at Pittsburgh, Pa. Secretary, H. Foster Bain, 29 West 39th St., New York City.

National Safety Council, Oct. 25-29, at Detroit, Mich. Managing director, W. H. Cameron, 108 East Ohio St., Chicago, Ill.

National Industrial Traffic League, Commodore Hotel, New York City, Nov. 17 and 18. Executive secretary, J. W. Beek, Chicago, Ill.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

Trade Literature

Barometer and Vacuum Recorder for Steam Turbines. Uehling Instrument Co., Paterson, N. J. Bulletin 150. Pp. 6; 8½x11 in.; illustrated. The bulletin includes turbine performance data, a list of users, charts, sectional views and dimension diagrams, including reference to a new model instrument for flush mounting on panel boards.

General Electric Co., Schenectady, N. Y., has issued the following bulletins: Arc Welding in G-E Factories, GEA-423, pp. 28; 8 x 10½ in.; Helicoil Sheath Wire Units, GEA 380, 4 pp. folder; Type MT Control Equipment for direct current series wound crane bridge and trolley motors, GEA-388, 4-pp. folder. These are all illustrated.

Type "L" Diesel Engine. The Foos Gas Engine Co., Springfield, Ohio. Bulletin No. 707. Four-pp. folder describing the new features in the construction of this engine, among which are its speed range up to 900 r.p.m.; it burns low-cost fuel oils commonly used in the larger Diesels; it is fully enclosed, it is a full Diesel, four-cycle engine, operating with the same high fuel economy as the largest air-injection Diesel engine.

"Automatic Pumping" is the title of a 24-pp. booklet issued by the Barrett, Haentjens Co., Hazleton, Pa. This bulletin No. 400a, differs from previous bulletins in that the subject is treated from a technical standpoint and several new methods of making centrifugal pumps automatic are described.

New Equipment

Shifts Track Leaving Rails Level for Tamping

Ordinarily, raising track when ballasting requires the use of track jacks and a large jack crew. To facilitate the rapid raising of the track and to keep the rails level during the process, a leveling device has been developed for the Nordberg track shifter built by the Nordberg Manufacturing Co., of Milwaukee, Wis.

The standard machine was designed primarily to shift track where large quantities of material must be moved, as in open-pits, quarries, dumps and fills, construction work and similar industrial operations. It is also suitable for raising track for rough ballasting where it is not so important that both rails be raised level or great accuracy be maintained in leveling the track after it is raised. For this service the track shifter will permit of a track crew of four or five men instead of fifteen or twenty as is ordinarily necessary. It eliminates also the use of track jacks and aligning bars.

With the single spud, with which the machine is customarily supplied, the difficulty of maintaining a level track, as when ballasting is being done, is apparent. To raise the track level, a device has been perfected which can be applied to any machine already in the field, making the track shifter suitable for shifting or raising track where close accuracy is necessary.

This device consists of a wider footpiece taking the place of the one ordinarily furnished. To the end of this footpiece are attached the two leveling spuds. The lifting action is supplied from the worm-driven spud attached to the center of the footpiece. As pressure is exerted downward and the spud begins to lift the track section and the machine which is clamped to it, the operator by means of two clamp levers controls the vertical movement of the leveling spuds and the amount of lift given to either rail. With this device

it is possible to raise the track level and when the desired height is reached to hold it in this position until the ballast has been shoveled in and tamped. The raising is done slowly and gradually without probability of damage to the track. It is accomplished without the use of track jacks and the inconvenience which they cause when shoveling in ballast. As jack men are not required, this device is also an important item in reducing ballasting expense. With this device it is possible to raise the track about 2 ft. in each lift.

The track shifter is a self-contained, self-propelled unit consisting of a steel-framed car on which is mounted a 40-hp., four-cylinder motor and the necessary mechanism for supplying the lifting action.

Starting Equipment Controls Motors Automatically

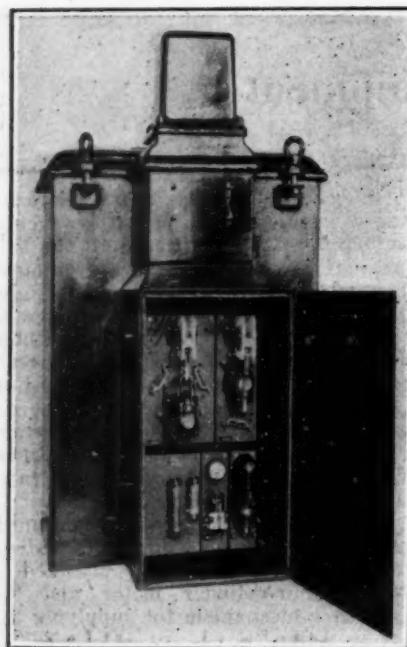
For controlling 2,300-volt synchronous motors a completely self-contained, oil-immersed automatic starter has been developed by the Electric Controller & Mfg. Co., of Cleveland, Ohio. This device, as shown in the accompanying illustration, is built for across-the-line starting of slow-speed motors and for reduced-voltage starting of higher speed machines. The illustration shows a reduced voltage starter, but the full-voltage equipment for the slow-speed motors is of similar appearance except that the height is less.

In either case the operator simply pushes a button to start the machine and as the motor approaches synchronous speed, the field excitation is automatically applied. The reduced-voltage starter consists of a welded boiler-plate tank containing an automatic double-throw switching mechanism, a power transformer for providing starting voltage, potential transformers giving 220 volts for the master-switch operating current and the current-limit transition relay, which connects the



Lifts Track

This machine will raise track 2 ft. at one operation. All that is then necessary is to fill or block up the track which can be done by three to five men instead of fifteen or twenty as is usually required.



Complete Starting Equipment

This tank with its attached cabinet contains all the mechanism necessary for starting a synchronous motor and putting it on the line. No switchboard equipment is required when this starter is installed.

motor to full voltage when it has been accelerated to approximately 85 per cent of synchronous speed.

Outside the tank a dustproof steel cabinet is provided. This encloses a field-switching mechanism, field-discharge resistor, timing relay and direct-current field ammeter. This cabinet also contains an automatic starter for operating a magnetic clutch. The full-voltage starter is of similar construction except that the starting auto-transformers are omitted. The equipment is complete in a single unit, making it possible to mount on the floor all the mechanism necessary for starting synchronous motors.

Mounts Motor and Reduction Gear on Same Bedplate

A back-gear attachment designed to operate under the most unfavorable conditions is announced by the General Electric Co. for use with its "500-Series" induction motors. This attachment is of unusually strong construction and is easily installed and adjusted.

The base, to which the motor and

back-shaft pedestals are bolted and doweled, is a single, large casting. A special unit-type pedestal is used, one casting forming the housing for the large back-shaft bearings. Thus maximum rigidity, permanent, correct alignment of shafts and meshing of gear and pinion, are assured.

The back shaft is provided with shoulders to limit end play and is made of special steel. It is supported by two extra large, double-seated, split bearings in dust-proof housings, holding oil sufficient for a number of months' operation.

A split gear case, fabricated from steel plates, protects the gear and pinion from dust and retains the grease or oil in which the gear runs. Two standard gear ratios are available. Steel or fabroil pinions with cast-iron gears may be used. Two box-type welded rails with an easy adjusting feature complete the equipment.

Roberts & Schaefer Purchase Car-Dumper Company

The Roberts & Schaefer Co., of Chicago, has purchased the assets and business of the Car-Dumper & Equipment Co., of Chicago, and after July 15 will take over the manufacture and sale of the rotary car-dumpers, car-feeders, car-controls, and all other equipment previously manufactured and sold by that company. The new owners also will complete all unfinished contracts and will be prepared to supply repair parts for all Car-Dumper equipment.

The acquired lines will be handled for Roberts & Schaefer in a department to be headed by George N. Simpson, president of the Car-Dumper & Equipment Co., and plans are being made for pushing these lines with even more vigor than in the past.

Publications Received

Annual Report for 1925 on the Mines of Nova Scotia. Department of Public Works and Mines, Halifax, N. S. Pp. 291; 6½x9½ in.; illustrated.

Annual Report of the Department of Mines and Mining of Indiana for the fiscal year ending Sept. 30, 1925. Pp. 29; 6x9 in.; tables.

The Effect of Temperature on the Registration of Single-Phase Induction

Watthour Meters, by Abner R. Knight and Max A. Faucett. Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 153. Pp. 26; 6x9 in.; illustrated. Contains the report of an investigation which was undertaken to determine the effect of temperature upon the registration of two-wire single-phase watt-hour meters.

Trade Standards adopted by the Compressed Air Society, New York City. Second edition. A number of tables relating to compressed air have been incorporated in this edition and a chapter of general information relating to commercial practices in the industry has been added. The book has 48 pp., 6x9 in., illustrated.

Rate of Combustion of Coal-Dust Particles: Part II—Effect of Particle Size Upon Pressure Increase Attending Flammation of Coal Dust, by Craig M. Bouton and J. H. Hayner. Mining and Metallurgical Investigations under the auspices of Carnegie Institute of Technology, U. S. Bureau of Mines and Mining and Metallurgical Advisory Boards. Price, 50c. Bulletin 22. Pp. 23; 6x9 in.; illustrated. The second phase of the study of the rate of combustion of coal-dust particles is discussed in this report; the first phase, the size classification of finely powdered coal by air currents, was published as Bulletin 12 in 1924.

Electric Power Survey, made by the Power Survey Committee, National Electric Light Association, Great Lakes Division, Chicago, Ill. Price, \$1. Pp. 84; 8½x11 in.; illustrated. Covers the four states of the Great Lakes Division completely and includes part of five other states in three adjoining divisions of the association.

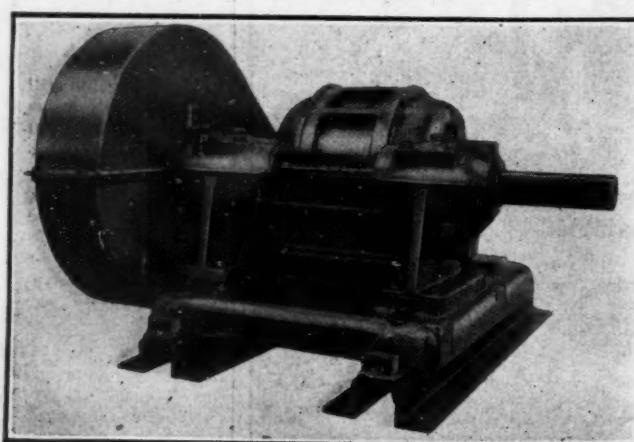
The Pressure Wave Sent Out by an Explosive, Part I, by W. Payman and H. Robinson. Safety in Mines Research Board. Paper No. 18. Price 2s. H. M. Stationery Office, London, England. Pp. 48; 6x9½ in.; illustrated. This is the first part of a research into the effect of the detonation of mining explosives on the atmosphere surrounding a shothole. A method is described for obtaining an accurate record of the rate at which the shock wave sent out by an explosive is propagated through the atmosphere.

Analyses of Missouri Coals. Bureau of Mines, Washington, D. C. Technical paper 366. Pp. 41; 6x9 in.; tables. Price 10c.

Thirteenth Annual Report of the State Inspector of Coal Mines of Colorado, 1925. Pp. 93; 6x9 in.; tables.

Explosion Hazards from the Use of Pulverized Coal at Industrial Plants, by L. D. Tracy Bureau of Mines, Washington, D. C. Bulletin 242. Pp. 103; 6x9 in.; illustrated. Price 25c. Describes both the bad and good features of pulverized-coal plants and gives recommendations for safe installation and operation.

Our World Trade in 1925. Foreign Commerce Department, Chamber of Commerce of the United States, Washington, D. C. Pp. 31; 6x9 in.; tables. Gives value and volume of the principal exports and imports between United States and chief foreign countries.



Reduction Gear

A single casting supports both motor and reduction gear having two standard gear ratios. Split case keeps dust from gear and retains oil or grease.